



Architecture of Manasara

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Translated from Original Sanskrit

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"What the learned world demand of us in India is to be quite certain of our data, to place the monumental record before them exactly as it now exists, and to interpret it faithfully and literally."

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PREFACE

History of publication

ARCHITECTURE OF MĀNASĀRA is an English version of a Sanskrit text of that name edited, with critical notes, for the first time by the writer. The text is based on all the eleven available manuscripts gathered together by the then Secretary of State for India, Sir Austin Chamberlain, for the use of the writer. Except one, all other manuscripts are fragmentary and none contains any commentary, drawings, diagrams or sketches. The buildings of the time, religious, military, or residential, do not appear to exist in their entirety for a ready reference. In 1838 Ram Raz based his *Essay on Architecture of the Hindus* on a few chapters of a single fragmentary manuscript. In recent years several other scholars have quoted extracts from one or other of the manuscripts, but no one, including Ram Raz, attempted the translation of any passage. A few Sanskrit texts of architecture have also been printed in the recent years, but none has been translated into English or elucidated in any other language, Indian or European.

It was the great Director General of Archaeology, Sir John Marshall, who conceived the idea, and advised Lord Pentland, the then Governor of Madras, to get a reliable version of the standard work on Indian architecture scientifically edited and properly elucidated, together with sketches, diagrams, and measured drawings, when he (Sir John Marshall) came to know, through Dr. F. W. Thomas, then Librarian of the India Office, London, that I had been working for some time as a Government of India State scholar on the subject in consultation with Mr. E. B. Havell and under the guidance of Dr. L. D. Barnett of the British Museum, Dr. Thomas himself, and Dr. J. Ph. Vogel of Leyden. But the unfortunate coincidence of His Excellency's retirement and Sir John's absence from India at the time of my arrival in Madras upset the preliminary arrangement made for the publication from Madras. On

my appointment to the Indian Educational Service in the United Provinces, Sir Claude F. de la Fosse, the then Director of Public Instruction, and the first Vice-Chancellor of the reconstructed Allahabad University, took up the matter with scholarly interest and induced the great educationist Governor, Sir Harcourt Butler, to sanction the publication on behalf of the United Provinces Government, through the Oxford University Press.

The work of seventeen years—which Professor E. J. Rapson of Cambridge University correctly predicted to be a life's undertaking—has thus reached its present destination. It is, however, not the end, but the beginning, of a new line of Indology which, it may perhaps be hoped, is likely to prove not merely of cultural and historical interest, but possibly of some practical benefit to the country and to the nation. Our architectural policy of the past few hundred years, based as it has been on foreign imitation, and in an entirely different climate and soil, has not proved quite successful in regard to temples and humble dwelling-houses, if not in regard to public edifices also. That the sole object of a work like the *Mānasāra* was primarily and ultimately practical in giving general as well as special guidance to the builders of that time, as also of the future generations, will be clear even to the casual reader of the book. Whether or not the extant structures which have been restored to the nation by the activity of the Archaeological Department, or which having defied the effect of time and weather, are yet standing almost in their original grandeur, will indicate the application of the rules and regulations, or at least the methods and principles laid down in the *Mānasāra*, remains to be proved. If, after making allowance for existing conditions and requirements, the methods and principles, as well as the rules and regulations laid down in the standard treatise, are found to be scientifically sound and suitable for modern buildings, big and small, they may be experimented with, and the solution of the problems relating to its textual imperfection and historical uncertainty may be left to the care of those whose mission is the elucidation of the past culture.

The preliminary accounts of the subject published in the writer's *Dictionary of Hindu Architecture* and *Indian Architecture according*

to Mānasāra Śilpa-śāstra have awakened a world-wide interest as will be seen from the extracts from reviews and opinions appended at the end of the present volume. This has emboldened me to publish as complete a record as is at present practicable. 'But the reader must understand that these volumes do not claim to be other than provisional. In the nature of things it could not be otherwise. These volumes may open up a new line of Indian achievement and may lead to a task which is just beginning. Fresh materials, facts, and figures are likely to come to light. In such conditions any approach to finality is out of the question.'

Preparation of the plates

Owing to the defective nature of the text, which has been shown elsewhere, one can hardly be perfectly sure of the interpretation. An elaborate effort, involving great expenditure of time, money, and convenience, was made to get into contact with the so-called traditional builders in the south, in the Orissan countries, in the Indian States of Rajputana, Central India, Gujarat, Bombay, in the Frontier Provinces, and in the Hill States, in company with trained and experienced engineers, architects, and interpreters, in the vain hope of getting some light from *salats*. These *salats* are stated to build in accordance with an ancient tradition which, they claim, to have inherited orally in some cases, but mostly from some fragmentary manuscripts that they have frequently failed to interpret.

Another effort, extending over many years and made through many agencies, both official and non-official, to engage the services, against tempting payment, of teachers or advanced students of the few schools of arts and architecture in the Indian States and elsewhere, mostly under the Government, ended also in failure.

In these circumstances, when it was about to be finally decided to publish this first edition without any illustrations, Mr. H. Hargreaves, the then Director General of Archaeology, in camp at Sanchi, while taking rest in the evening, possibly in a meditative mood concerning ancient monuments, was moved by my tale which had been once

before related to him at his palatial office at New Delhi. He very definitely disagreed with my intention of bringing out such a volume without illustrations, and readily accepted my request to place at my disposal the services of Mr. S. C. Mukherji, B.A., G.D.ARC., A.I.I.A., then a research scholar of the Archaeological Department, whose name had been mentioned to me by his (Mr. Hargreaves') personal assistant, Mr. B. T. Mazumdar, and who was subsequently recommended by Mr. R. L. Bansal, a very enthusiastic engineer of the Public Works Department. As an experienced officer of his exalted position, Mr. Hargreaves stipulated, however, that Mr. Mukherji's services might be available only for a limited period and that I must be present while Mr. Mukherji would be working at his (Mr. Hargreaves') office at Simla, obviously to get the fullest advantage of a joint effort of his whole department and my own.

Mr. Mukherji himself undertook the task with the greatest possible enthusiasm. He had graduated with Sanskrit and ancient history and received training in the method and principle of Græco-Roman and modern architecture. As a part of his training, he had been taken under proper guidance round Nasik, Madura, and other places where he had to examine and sketch ancient Hindu and Muhammadan buildings. He came to know of the *Mānasāra* at the Agra branch of the Archaeological Department, wherefrom Mr. R. L. Bansal used to take books in connexion with the measured drawings he had been making to illustrate the preliminary chapters of the *Mānasāra*. Thus Mr. Mukherji eagerly undertook the task when Mr. Bansal could no longer continue with it.

Mr. Bansal, after his training at Roorkee Engineering College, had been in charge of roads and buildings for several years before he started to make observations, in consultation with Dr. Gorakh Prasad, D.SC., the Reader in Astronomy at Allahabad University, on the astronomical calculation of the *Mānasāra* in connexion with the dialling and orientation of buildings. Mr. Bansal also accompanied me in my tour over Rajputana, including Pushkar, Mount Abu, and Jaipur, where he studied and made copies and sketches of old structures in order to

ascertain the exact nature of the mouldings that are frequently referred to in the *Mānasāra*. Mr. Bansal's drafts on these objects have been accepted without much alteration and have been finally drawn by Mr. Mukherji. I shall ever remain grateful to Mr. Bansal and Dr. Gorakh Prasad for their very valuable assistance in doing foundation work for the architectural drawings.

For the first three months, Mr. Mukherji and myself worked together at the rate of nearly sixteen hours a day. As a result of this hard work Mr. Mukherji was able to make drafts of the more important chapters, including the one dealing with pillars and columns. The first fruit of his labour apparently satisfied Mr. Hargreaves, who took round Mr. Mukherji's studio big officials, including Sir Frank Noyce, the then Educational Secretary, Mr. A. H. Mackenzie, then Commissioner of Education, and others, in order to explain to them the revelation of the *Mānasāra*. Mr. Mukherji has worked on these drawings for over two years and has earned my everlasting gratitude. Words fail me to express my indebtedness to Mr. Hargreaves and the Archaeological Department, without whose assistance these drawings could not have been prepared.

Thus it can be expected that all preliminary precautions that have been taken at every stage in the execution of the architectural drawings may ensure a faithful representation in lines of what *Mānasāra* expressed in words. The measured drawings, one hundred and thirty-five in number, are appended as illustrations but represent only a fraction of those architectural objects that are actually described in detail. In any event these drawings will supply the much needed materials to determine whether the extant monuments of Hindu architecture were based on the methods and principles governing the details of the village scheme, town-planning, forts and fortresses, and temples, military buildings, gorgeous palaces and humble residential dwellings of various sizes and measures described in the *Mānasāra*.

The sculptural drawings in line and in colours could not be given the same advantage of joint deliberation, mutual consultation, and

final revision. Despite the fact that there is an ever-growing class of artists all over India, most of those of local renown and teachers of recognized schools of arts in Bombay, Baroda, Delhi, Lahore, Lucknow, Allahabad, Ajmer, Jaipur, Jodhpur, Calcutta, Shillong, Cuttack, Puri, Madras, and Bangalore refused, after due deliberation, to undertake the work; and the few artists who agreed, on their own terms, gave up the task after trials lasting from two to three months. At last Professor M. H. Krishna, M.A., D.LITT., Director of Archaeology, Mysore State, took me to several local artists and undertook to select one for me. But after protracted negotiations lasting over eight months he gave up in disgust the prospect of finding a reliable person for the purpose, declaring that "our old-type artists are so old-worldly in their business habits." But I am thankful to him for having brought me in contact with Śilpa Siddhanti Śivayogi Śrī Siddalingaswamy, the head of the Jagadguru Nāgalingaswamy monastery, who claims to be "a Śilpin by heredity," to have "studied Śilpa, painting, etc., at the feet of Guru" and to have been "training for a quarter of a century a number of youths in the art of sculpture, painting, and kindred subjects according to Śāstric canons." He undertook, after an experiment lasting for nearly a year, to supply twenty-two drawings on which another six months were spent. I believe that he has given the best of his inherited skill, ripe experience, and spiritual study of the subject to these sculptural drawings.

In the absence of the expected assistance and personal supervision of Dr. Krishna, the elucidation of the details had to be carried out in lengthy, and, at times, trying correspondence. I shall, however, remain grateful to Śilpa Siddhanti Śivayogi Śrī Siddalingaswamy who, among all the artists I had approached, had the courage and patience of partly illustrating the sculptural section of the Encyclopædia of Hindu Arts, and hopes to execute the remaining sculptural drawings, numbering some three hundred, if his present performance proves successful and if the *Mānasāra* itself receives the practical recognition it deserves.

Acknowledgments

The publication of these volumes has been made possible through the generosity of the Secretary of State for India, the Government of India, and the Government of the United Provinces of Agra and Oudh, to whom I can only express inadequately my most respectful thanks. To Professor F. W. Thomas, C.I.E., M.A., PH.D. the then Librarian of India Office, London, I owe most of the materials and general guidance at the early stage of my undertaking : words fail me to express my indebtedness to him.

In addition to the assistance already acknowledged, my gratitude is due to Rai Bahadur Dayaram Sahni, M.A., the present Director General of Archaeology, for his scholarly interest in the work and the friendly appreciation for the past ten years, and to Mr. K. N. Dikshit, M.A., the then Deputy Director General of Archaeology, who used to come to my hotel and spent hours in discussing various obstinate passages which baffled repeated attempts at their interpretation, and who also very generously reviewed the earlier volumes. For his scholarly sympathy and generous appreciation my grateful acknowledgment is due to Mr. H. R. Harrop, M.A., I.E.S., the Deputy Director of Public Instruction. His interest increased through his official correspondence during the past ten years concerning the publication with the Oxford University Press, who, incidentally, have been anxious since the first year of their publication to bring out a second edition of my *Dictionary* and *Indian Architecture*.

For his very encouraging and generous review of the earlier volumes and for affording me all facilities to undertake extensive tours year after year, I shall ever remain grateful to one of the greatest orientialists, Mahamahopadhyaya Pandit Ganganath Jha, M.A., D.LITT., LL.D., until recently Vice-Chancellor of Allahabad University. To my esteemed colleague, Professor C. D. Thompson, M.A., the head of our Economics Department, I am grateful for many linguistic and textual improvements of the architectural section, the penultimate proof of which he revised with great interest. I am grateful to another amateur archaeologist, Mr. P. C. Barat, B.A., for comparing some proofs and

suggesting certain improvements ; and to Messrs. S. C. Mukherji and N. K. Dasgupta, M.A., B.L., for their valuable assistance in arranging and comparing the index slips, which I prepared myself. My gratitude is due to my colleagues of the Sanskrit Department, Dr. B. R. Saksena, M.A., D.LITT., Dr. Umesh Misra, M.A., D.LITT., Pandit K. Chattopadhyaya, M.A., and Pandit Raghubar Mithulal Shastri, M.A., M.O.L., for their scholarly interest, friendly sympathy, encouraging appreciation, and various assistance from time to time. Not only for general encouragement, but also for valuable suggestions and constructive criticism of the earlier volumes, I am grateful to the reviewers whose opinions are quoted at the end of this volume.

Like many other people, my gratitude is due to Shrimant Bala Shahib Pant Pratinidhi. B.A., the renowned Ruler of Oundh who has done so much to revive our ancient culture and to unfold our artistic treasures. He has taken a very great interest in the publication of the *Mānasāra* and intends to build a house according to the direction of this standard *Śilpa-śāstra*.

Last, but not least, I am pleased to acknowledge my grateful thanks to Mr. D. W. Crighton and his staff for their ever sympathetic and kind treatment towards me and for their patient and careful handling which was necessary in bringing out a volume like this. For his personal interest in the work and for many useful suggestions and improvements I am further indebted to Mr. Crighton, who readily took the trouble of revising this Preface.

But for a very special reason it would be rather unusual to give publicity to and acknewledge with grateful recollection the indirect assistance, indispensable as it has been, received from one's own people. Miss Śakti Chatterjee, who was educated in a convent school for girls at Shillong, though connected with Dr. Rabindranath Tagore, had acquired no artistic skill when she became my wife in 1923. Since our marriage, however, the traditional love of the Tagore family for arts, which may have been latent in her, came to help me immensely. She suddenly developed an enthusiasm for the completion of these volumes and contented herself with a

sort of desertion during all these long years because I had almost wedded myself to the *Mānasāra* and had to give to this task all the attention and time, even during Sundays and long vacations, which could be spared from the strenuous duties of the Professor of a University (newly reconstructed into a residential institution for the first time in India), of the Head of a department of classics in these days of science, and the Dean of a Faculty including some thousand students and some hundred teachers of all ranks and of all temperaments. But for her enthusiasm these volumes, comprising some three thousand pages of crown quarto size, could not have been published in another ten years' time, for my own patience and temper, as well as my eyesight, were put to a severe trial in doing everything single-handed in one stretch, without taking any leave or holiday since the work was begun in 1914.

Method of translation

None knows more clearly than myself what imperfections are to be found in this first attempt at translating such an imperfect text on such highly technical subjects. I owe it, therefore, to the reader to indicate the general method I have closely followed. In the translation of the Text I have endeavoured to adhere as closely as possible to the language of the original. It has consistently been my aim to reproduce the bare meaning of the *Mānasāra*, and to avoid, as far as can be done, taking liberties with the language in order to bring out meanings other than what the most obvious and ordinary natural interpretation would suggest. Notwithstanding this, however, I found myself obliged in some cases to deviate from a strictly literal treatment. The reason for this was mainly the very peculiar nature of the Text and its inconsistent construction, following, as it seemingly does, no rules of grammar. Under such circumstances, there being no standard to which the language can be made to conform, a particular passage may naturally lend itself to wide speculation and diverse conjectures. The method I have followed in such cases has been to avoid the tendency towards speculation and broad construction, and to attempt a more or less free rendering

only so far as it was obviously necessary, or there was at least a high degree of probability to warrant it. There were some passages, for example, which in spite of the clear discrepancies in grammar did not fail to show what was meant. There were others which presented greater difficulty and it was only after a careful comparison of these, with other parts of the Text, and a reference to the passages in other works such as the *Āgamas*, *Purāṇas*, and a number of manuscripts on the *Śilpa-śāstra* dealing with similar matters of better construction, and easier interpretation, that I was enabled to explain their sense.

Besides the grammatical confusion, there was another great difficulty I was faced with owing to the technical nature of the subject. There are various words used in a strictly technical sense, differing entirely from their derivative literal renderings. It is from the very nature of these an extremely difficult task to trace the exact significance of forgotten ancient technical expressions. I have attempted to some extent to apportion to these technical terms certain fixed meanings although there appears to be an apparent disagreement on particular occasions. Below are instanced a few of such difficulties :

(1) The words Tāra, Vistāra, and Viśāla seem, generally speaking, to have been used to signify length, breadth, and width, and I have rendered them as a rule accordingly. Occasionally, however, passages are met with in which such a distinction between the words is not apparent. Both Tāra and Viśāla are sometimes used in the sense of Vistāra or breadth.

(2) The words Aṁśa, Mātra, and Aṅgula have been used indiscriminately to signify either one of any number of equal parts into which the length or height of a particular object is divided, or a fixed standard of measurement either absolute or relative.

It is, however, laid down in the Text that the Aṅgula measurement is of four kinds—

(*a*) the Bera Aṅgula is stated to be the measurement by the finger-breadth of the idol ;

(*b*) the Deha Labdha Aṅgula is nothing but one of the equal parts into which the length or height of the idol is divided ;

(*c*) the Mātra or Mātrāṅgula means the finger-breadth of the master or architect but it is also used as one of the equal parts into which the height of the master or a structure is divided; and

(*d*) the Mānāṅgula is the Aṅgula proper; this is the standard measurement equal to about three-fourths of an inch. But in use there appears to be no more distinction made between these different kinds of Aṅgula than between the words Aṁśa, Mātra, and Aṅgula themselves.

(3) The names of the different mouldings or the different parts of a structure are not clearly distinguished. The Text for example gives the following sets of words as synonyms:

Kapota—Prastara, Mañcha, Prachchhādana, Gopāna, Vitāna, Valabhi, Mattavāraṇa, Vidhāna and Lupā.

Mañcha—Prati, Prastara, Prativājana, Anvanta, Avasāna, Vidhāna, and Vidhānaka.

Vājana—Kshepaṇa, Vetra, Paṭṭa, Uttara, Paṭṭikā, Kampa, Dṛikka, Maṇḍa, Antarita, etc.

Tulādaṇḍa—Jayanti, Phalakā, Kapota, Vaktra-hasta, Lupā, Gopānaka, Chandra, etc.

Jaṅghā—Charaṇa, Stali, Stambha, Aṅghri, Sthāṇu, Sthūṇa, Pāda, Kampa, Araṇi, Bhāraka, and Dhāraṇa.

But it appears very clear from the way these different words are used, that there is a distinction between them. I have attempted to explain elaborately most of these in the *Dictionary*.

In a few cases of technical expressions which are now obsolete and the exact significance of which is often doubtful or conjectural I could not find suitable terms and phraseology of the science to translate them. The literal meanings of the words would convey no sense at all. If we have to coin words for these, it would be necessary to have the assistance of the artist on the one hand, of the philologist on the other, and a reference to existing buildings. For the present I have thought it better to quote the original expressions either untranslated altogether, or with literal meanings of them in bracket.

I have thus endeavoured to follow the general lines adopted by Dr. Bühler in translating the *Manu-saṁhitā*. But in place of Bühler's citation of different commentaries on the *Manu-saṁhitā* I have referred to the numerous illustrative passages, not from commentaries on the *Mānasāra*, of which there are none, but from other *Silpa-śāstra*, inscriptions, *Agamas*, *Purāṇas*, and other general literature which have been gathered together in my *Dictionary*. It was, however, not possible to quote all these numerous references in the footnotes.

General survey

So far as the contents of the *Mānasāra* are concerned it will be a mere repetition to give a detailed summary, as that has once been separately published from Leiden (1917) and has also been included in the writer's *Indian Architecture* (1927). It will be enough to refer to the main points. It will be noticed that of the seventy chapters the first eight are introductory, the next forty-two deal with architectural matters, and the last twenty-one are devoted to sculpture.

It opens, following the usual custom, with a prayer to the Creator Brahmā and touches upon the origin and development of the science of Architecture, from Siva, Brahmā, and Vishṇu, through Indra, Bṛihaspati, and Nārada, to the class of seers (*ṛishi*) called Mānasāra, and concludes the introduction with a list of the chapters. Of the preliminary matters, two distinct subjects, namely, the system of measurement and the qualifications of an architect, are dealt with next (Chapter II). *Aṅgula* (finger's breadth), equivalent to three-fourths of an inch, is the unit of architectural measures. The *tāla* (span between the tips of fully stretched thumb and middle finger) is the unit of sculptural measure, which is regulated by the length of the face, inclusive of head, of an image. This latter system of measure is dealt with in several chapters of the sculptural section.

Architects are divided into four classes. Together they form the guild of architects, each an expert in his own department but possessing a general knowledge of the science of architecture as a whole.

They consist of the chief architect (*Sthapati*), the designer or draftsman (*Sutrāgrāhin*), the painter (*Vardhaki*), and the carpenter or joiner (*Sūtradhāra*). Different sets of qualifications are prescribed for each class, the gist of which may be expressed in the words of the Roman architect Vitruvius : 'an architect should be ingenious, and apt in the acquisition of knowledge ; he should be a good writer, a skilful draftsman, versed in geometry and optics, expert at figures, acquainted with history, informed on the principles of natural and moral philosophy, somewhat of a musician, not ignorant of the sciences of law and physic, nor of the motions, laws, and relations to each other, of the heavenly bodies.' He must possess a wide outlook, bold temperament and self-control, and be endowed with all qualifications of a supreme managing director. He must be free from disease or disability and from the seven vices, like gambling, addiction to women, etc.

The next chapter (III) called *Vāstu-prakaraṇa* defines the different branches of architecture, which are divided into four classes, namely, the ground, buildings, conveyances, and couches. The two following chapters (IV, V) on examination of soil and selection of site deal with the contour, colour, odour, features, taste and touch, elevation of the ground, and growth thereon of certain plants, trees, grasses, whereupon a village, town, fort, palace, temple, or dwelling house is to be built. Chapter VI deals with the orientation of buildings and recommends that a residential building should preferably face the east or the north-east, and never the south-east. Incidentally the principles, mechanics, and details of dialling are exhaustively described. The site-plans are next described (Chapter VII) : thirty-two schemes are distinguished, each of which is divided into squares of various numbers. Following the usual custom, this preliminary section concludes with a chapter (VIII) on offerings to the presiding deities of the site.

Town-planning is the next subject described in great detail in two chapters (IX, X). It is treated under two heads, *Grāma-lakshaṇa* (village scheme) and *Nagara-vidhāna* (lay-out of towns), and under three categories, village, town, and fort. Villages are divided into eight classes called *daṇḍaka*, *sarvatobhadra*, *nandyāvarta*, *padmaka*,

svastika, prastara, kārmuka and *chaturmukha*: each of these, as the names indicate, represents a particular design and lay-out of which detailed measures and other particulars are given. Towns are also divided into eight classes: *Rājadhānī, nagara, pura, nagarī, kheṭa, kharvata, kubjaka*, and *pattana*. Forts are first divided into eight classes according to the size and the object and are called *śibira, vāhinimukha, sthāniya, droṇaka saṁviddha* or *vardhaka, kolaka, nigama*, and *skandāvāra*. According to their situation they are further classified into the mountain fort, water fort, chariot fort, divine fort, clay fort, and mixed fort. The mountain fort is further subdivided into three classes as it is built on the top of a mountain, in the valley and on the slope.

The next chapter (XI) describes in detail the proportions of breadth, length, and height of buildings of one to twelve storeys, assigned to persons of different ranks. Five forms, namely, square, rectangular, octagonal, round, and oval, are prescribed for buildings of four different classes, *jāti, chhanda, vikalpa*, and *ābhāsa*. These forms are equally applicable to religious, military, and residential buildings. A palace of five to twelve storeys is stated to suit the emperor or universal monarch, highest in rank among the nine classes of kings. Residences of one to three storeys are assigned to the heir-apparent and the chief feudatories, and so on.

Chapter XII deals with the foundations whereupon buildings, villages, and tanks are built. The foundation is excavated up to the depth of man's height with uplifted arms in the rocky or sandy ground as may be available and best suited to the structure to be erected. It is laid down that the bottom of the pit should be rocky or watery. The different materials to fill up the pit and various processes and measures are specified in great detail. The gist of the directions on foundations may be best expressed *mutatis mutandis* in the words of Vitruvius: 'When we are satisfied with the spot fixed on for the site of the city . . . the irfoundations should be carried down to a solid bottom, if such can be found, and should be built thereon of such thickness as may be necessary for the

proper support of that part of the wall which stands above the natural level of the ground. They should be of the soundest workmanship and materials, and of greater thickness than the walls above. If solid ground can be come to, the foundations should go down to it and into it, according to the magnitude of the work, and the sub-struction be built up as solid as possible. Above the ground of the foundation, the wall should be one-half thicker than the column it is to receive so that the lower parts which carry the greatest weight, may be stronger than the upper part . . . . Nor must the mouldings of the bases of the columns project beyond the solid. Thus, also, should be regulated the thickness of all walls above ground. The intervals between the foundations brought up under the columns, should be either rammed down hard or arched, so as to prevent the foundation piers from swerving. If solid ground cannot be come to, and the ground be loose or marshy, the place must be excavated, cleared, and either elder, olive, or oak piles, previously charred, must be driven with a machine, as close to each other as possible, and the intervals between the piles filled with charcoal. The heaviest foundations may be laid on such a base.'

The next four chapters (XIII—XVI) deal with the column and its different component parts, namely, the pedestal, the base, the shaft, and the entablature, and their various mouldings and ornaments. Twelve kinds of pedestals are described with detailed measurements of the various mouldings of each pedestal. The variety, the beauty of proportion, and the richness of ornaments are remarkable. The same remark is true with regard to the bases also which are described in detail under sixty-four varieties. While in Græco-Roman orders the forms and dimensions of both the base and the pedestal are fixed by invariable rules with respect to the orders in which they are employed, in the Indian orders, it will be noticed, the choice is left to the option of the architects. The entablatures, including the capital, and comprising the architrave, frieze and cornice, are described in detail under eight varieties. Their massiveness offers a striking contrast to the lightness of the Grecian entablatures.

Columns are divided into five orders in regard to general shapes and are called *Brahmakānta*, *Vishṇukānta*, *Rudrakānta*, *Śivakānta*, and *Skandakānta*. With respect to dimensions and ornaments columns are classified under *Chitrakarṇa*, *Padmakānta*, *Chitraskambha*, *Pālikā-stambha*, and *Kumbha-stambha*.

In the *Matsya-purāṇa*, the *Bṛihat-saṃhitā*, and the *Kiraṇatantra* columns are also divided into five classes and are called *Ruchaka*, *Vajra*, *Dvi-vajra*, *Pralinaka*, and *Vṛitta*. In the *Suprabhedāgama* the names of the five orders are *Śrīkara*, *Chandrakānta*, *Saumukhya*, *Priyadarśana*, and *Śubhaṅkarī* which is composite of *Saumukhya* and *Priyadarśana*. The Græco-Roman orders, as is well known, are also five in number and are called Doric, Ionic, Corinthian, Tuscan, and Composite.

The total number of mouldings or the component parts of the column, including those of the pedestal, base, and entablature are forty-seven in the *Mānasāra*. The mouldings of the shaft alone number five and are called *bodhikā*, *mushṭi-bandha*, *phalakā*, *tāṭikā*, and *ghaṭa*.

The *Suprabhedāgama* describes two sets of seven mouldings, one set referring to the column of the main building and the other set to that of the pavilion, and are called respectively, *daṇḍa*, *maṇḍi*, *kaṇṭha*, *kumbha*, *phalakā*, *vīrakaṇṭha* and *bodhikā*; and *uttara*, *potikā*, *vajana*, *mūrdhikā*, *tulā*, *jayantī* and *tala*. In the *Matsya-purāṇa*, the *Bṛihatsaṁhitā*, and the *Kiraṇa-tantra*, the mouldings are eight in number and bear the same names: *vāhana*, *ghaṭa*, *padma*, *uttaroshṭha*, *bāhulya*, *hāra*, *tulā*, and *upatulā*. The component mouldings of the Græco-Roman orders are also eight in number and are known as (1) the ovolo, echinus or quarter-round, (2) the talon, ogee or reversed cyma, (3) the cyma, cyma-recta, or cymatium, (4) the torus, (5) the scotia or trochilos, (6) the cavetto, mouth or hollow, (7) the astragal, and (8) the fillet, listel or annulet.

The concluding chapter (XVII) on the preliminary subjects deals with joinery. The wood-joining is of various kinds and forms. Pieces of wood are joined in such a way as to make the figures of *nandyāvarta*, *svastika*, *sarvatobhadra*, and such other shapes. Some kinds of wood are strictly forbidden to be joined with some others.

The next chapter (XVIII) deals with certain general features of buildings which are specified in the following twelve chapters (XIX—XXX). A brief reference is made in the beginning to the foundations. Then the subjects are divided under several headings. First the classification of buildings of one to twelve storeys, and the proportionate dimensions thereof are described very elaborately and various alternatives are given. The three styles, *Nāgara, Vesara,* and *Draviḍa,* and their distinguishing features based on the shapes of the top portions (*śikhara,* spherical roof) are next described. Then are described in order the domes, the pinnacle staffs, the pentroofs, and the front porches, of each of which the classification, dimensions and other particulars are given in detail. The chapter concludes with a description of the building materials, namely stone, brick, wood, and metal (*lit.*, iron), and the classifications of buildings thereunder.

The chapter on 'Single-storey buildings' (XIX) opens with further classifications of buildings under *jāti, chhanda, vikalpa,* and *ābhāsa* based on the length of the cubit, which is taken as the unit of measure; under *sthānaka, āsana,* and *śayana,* otherwise called *saṁchita, asaṁchita,* and *apasaṁchita* based both on the standard of measure, which may be respectively height, breadth and length, and on the erect, sitting, and recumbent postures of the idols when the buildings happen to be temples; lastly, under masculine, feminine, and neuter, based on the equiangular, rectangular, and circular forms, as also on the sex of the main deity to be installed when the building is used as a temple.

After a brief reference to the dimensions of the storey the comparative measurement and plans are described at great length. The whole height of the building is divided into a certain number of equal parts which are distributed in a happy proportion amongst the component members, namely the base, pillar, entablature, neck, dome and pinnacle. Similarly, the length of the entire temple is divided into a certain number of equal parts which are also distributed amongst various rooms and halls, such as the shrine, the anterooms, the pavilion, etc. A detailed account of the water-channels, like those of the *Mahenjodaro,* is added. Steps and staircases are

described at the end of Chapter XXX. The concluding portions of Chapter XIX and the next eleven chapters are devoted to an enumeration of the various deities with whose images the doors and walls of buildings are decorated. The Buddhist and the Jain temples are stated to be similarly built, with this difference, that in those temples the images of Buddhist and Jain deities are installed.

There are eight types of single-storey buildings indicating different designs and bearing technical and mostly significant names. Similarly, the buildings of two storeys are divided into eight types, of three storeys into eight types, of four storeys into eight types, of five storeys into eight types, of six storeys into thirteen types, of seven storeys into eight types, of eight storeys into eight types, of nine storeys into seven types, of ten storeys into six types, of eleven storeys into six types, and of twelve storeys into ten types. The last ten types are given geographical names and seem to imply ten provinces into which whole India was architecturally divided—*Pāñchāla* (the Punjab), *Drāviḍa* (Deccan), *Madhyakānta* (Doab), *Kaliṅgakānta* (Coromandal Coast), *Virāṭa* (Jaipur), *Kerala* (Malabar), *Vaṁśakānta* (Kauśāmbī), *Magadhakānta* (South Bihar), *Janakakānta* (North Bihar), and *Sphurjaka* (? Gurjara,)[1].

The compound of a big house, temple, or palace, is divided into five courts (Chapter XXXI). The fourth court, after which the chapter is named *Prākāra*, is divided into *jāti, chhanda, vikalpa, ābhāsa* and *kāmya* classes, as also into *śuddha* (of one material), *miśra* (of two materials), and *saṅkīrṇa* (of mixed materials) classes. At the outset a reference is made to five kinds of *prākāra* buildings in connexion with *bali* (offerings), *parivāra* (attendant deities), *śobhā* (beauty), and *rakshaṇa* (defence). The shrines of the attendant deities in connexion with a big temple, and the gate-houses both for temples and palaces are very briefly described in conclusion, the next two chapters being entirely devoted to a special treatment of these two subjects.

The temples of the attendant deities are stated (in Chapter XXXII) to be built round the *prākāra* (court). At the eight cardinal points

[1] For identification of these places see details in the writer's *Indian Architecture*, pp. 173 175.

of the innermost or the first court, the shrines of a group of eight deities are built. Groups of sixteen and thirty-two deities are located in the second and the third court respectively. Between the third and the fifth court is said to be a special pavilion. After an elaborate description of the situation of the shrine for each of the deities of the three groups, the attendant deities of Vishṇu are described in detail.

Chapter XXXIII deals with gate houses of various kinds which are assigned to both temples and palaces. They are first divided into five classes as they belong to the five courts and bear very significant names : *dvāra-śobhā* (beauty of the gate), *dvāra-śālā* (gate-house), *dvāra-prāsāda* (gate-palace), *dvāra-harmya* (gate-mansion) and *mahā-gopura* (great cow-house). Each of these five classes is sub-divided into three sizes : small, intermediate and large. Under each of these fifteen varieties the gate-houses are elaborately described. They are further divided into ten classes, bearing ten different technical names, with regard to the number of domes, pinnacles, neck-peaks, and vestibules. They are made one to sixteen storeys high. The dimensions and ornaments of each storey are described in detail. Pillars, entablatures, roofs, walls, floors, doors, etc., are also fully described.

The chapter closes with an interesting description of windows, not only for gate-houses, but also for other kinds of buildings, both religious and residential. Windows admit of various patterns represented by the following designations : *nāga-bandha* (snake-band), *valli* (creeper), *gavāksha* (cow's eye), *kuñjarāksha* (elephant's eye), *svastika* (cross-shape), *sarvatobhadra* (a special design), *nandyāvarta* (another special design), and *pushpa-bandha* (flower-band). They are decorated with floral and foliated ornaments, as well as with decorative devices in imitation of jewels. The dimensions are mostly left to the discretion of architects with a general direction in regard to the windows for gate-houses.

Detached buildings situated both within the compound and outside, have been described in great detail in the chapter (XXXIV) on 'Pavilions.' Pavilions are single-storey buildings, generally

self-contained, but sometimes they imply the special rooms in a house. They are also built on the roadside and on the sea-shore; on the banks of a river, tank, or lake.

Various component members of pavilions such as walls, roofs, floors, verandahs, court-yards, doors, windows, pillars, sheds, etc., are described in detail. Seven pavilions bearing the names of the seven well-known mountains are stated to be built in front of the main edifice and to be used as a bath-room, study, library, and so forth.

Pavilions bearing other names and descriptions are mentioned for wedding and other ceremonies, for kitchen, for storing water, etc., for guests, elephants, horses, and for pilgrimage, etc. The chapter closes with a description of the forms and shapes of pavilions. The *jāti* shape is given to the pavilions of the temples and the residences of the Brahmans, the *chhanda* shape to those of the Kshatriyas, the *vikalpa* shape to those of the Vaiśyas, and the *ābhāsa* shape to those of the Śūdras. Again, the pavilions are classified under technical names in accordance with the number of their faces, which vary from two to six.[1]

Chapter XXXV deals with the 'Storeyed Mansions' which consist of rows of buildings varying from one to ten. The blocks of buildings varying in number of storeys up to twelve are artistically joined up. They are classified under six main groups called *Daṇḍaka, Svastika, Maulika, Chaturmukha, Sarvatobhadra,* and *Vardhamāna*. Each of these is again sub-divided into several types: the arrangement of the *Daṇḍaka* mansion, for instance, is described under eight varieties. The *Daṇḍaka* is an isolated mansion and consists of a single row of buildings and would look like a stick (*daṇḍaka*). The *Svastika* mansion is plough-shaped and consists of two rows of buildings. The *Maulika* mansion is shaped like a winnowing basket and consists of three rows of buildings. The *Chaturmukha* mansion is four-faced and consists of four rows of buildings. The *Sarvatobhadra* mansion consists of seven rows of buildings, and

[1] In the *Matsya-purāṇa* (chap. 270, v. 1-16) pavilions are divided according to the number of pillars (see the writer's *Dictionary*, pp. 471-472).

the *Vardhamāna* of ten rows of buildings. These huge buildings are naturally meant for kings, to the nine classes of whom they are assigned in accordance with the importance of the mansions and the rank of the king. But they are also stated to be used by the Gods, the Brahmans, the Kshatriyas, the Vaiśyas, the Śūdras, the ascetics, the hermits, the priests, the Buddhists, the warriors fighting with the help of the horse, the elephant, and the chariot, the artists and the courtesans. Their lay-out, architectural members with dimensions, ornaments, and other details are fully described.

Chapter XXXVI deals with the situation and dimensions of houses fit for the residence of the twice-born and all other castes. They may be built in a village, city, trading centre, on sea, on the bank of a river, on the side of a hill, etc. The length of a house may be one-and-a-quarter to four times the breadth. On the central plot of the innermost court is generally built a temple or public hall. Around this are constructed dwelling-houses for the master of the family, his wife and children, servants, sheds for cows, horses, poultry, etc., kitchens and dining halls, guest houses, reading rooms, halls for daily sacrifice, music, dancing girls and for all other domestic purposes. Excepting the extreme boundary wall these houses are generally built in order on one side of the (partition) wall. Thus are stated to be built 'in accordance with the rules of the science of architecture, temples, residences, monasteries, treasuries, law-courts, stables, etc., as described in case of towns' (Chapters IX, X). This chapter corresponds in a way to Chapter XXXII where the situations of shrines for attendant deities are described.

The next chapter (XXXVII) describes the ceremonies in connexion with the opening of and first entry into a house.

Chapters XXXVIII and XXXIX are devoted to a description of doors, including what is called the water-door or drain, and dormer-windows, windows proper having been treated at the end of Chapter XXXIII. In the former of these two chapters mainly the situations of doors are elucidated, while dimensions, constructional details, ornaments, etc., are referred to in the latter chapter.

Chapters XL—XLII deal primarily with the palaces of kings of various ranks. Incidentally, the royal orders, insignia, qualifications and entourage, including the strength of the army and revenue, are mentioned in two chapters (XLI—XLII). The royalty is divided into nine classes, namely the *Chakravartin*, *Mahārāja* also called *Adhirāja*, *Narendra*, *Pārshṇika*, *Paṭṭadhara*, *Maṇḍaleśa*, *Paṭṭabhāj*, *Prāhāraka*, and *Astragrāha*. Their characteristics are described in detail (in Chapter XLII). The general and individual qualifications of these kings, as also the army and entourage of each class, are given in Chapter XLI. Very minute details of the palaces of each of these nine classes of kings are described in full in Chapter XL. Palaces are naturally the most gorgeous buildings and the large ones are furnished with as many as seven courts in place of the five courts referred to in Chapter XXXI, which are meant for large temples and edifices.

Other buildings which are necessary adjuncts to the palace of an Indian King include the coronation pavilion, audience halls, arsenals, treasury, store rooms, etc., in addition to the gorgeous inner apartments and residences for private use of queens and others. In the outer part are situated the offices and the residences for the Crown Prince, family priests, ministers and others. Stables are generally situated near the main gate. Prisons are built in an out-of-the-way place. Pleasure gardens, groves, tanks, arena for ram fights, etc., are assigned their proper places.

In Chapter XLIII cars and chariots for the ceremonial and ordinary use of Gods, Brahmans and Kings, as well as for war and other purposes, are treated with all architectural details. Their wheels, storeys, pinnacles, etc., and the shapes, dimensions, ornaments, and mouldings are described in detail. They are once classified under the four main styles, namely the *Nāgara* (square), *Drāvida* (octagonal), *Vesara* (circular, i.e. round) and *Kāliṅga* (hexagonal). Then with regard to the number of porticos (*bhadra*) and other features they are classified as *nabhasvān-bhadraka*, *prabhañjana-bhadraka*, *nivāta-bhadraka*,

pavana-bhadraka, prishada-bhadraka, chandraka-bhadraka and *anila-bhadraka.*

Chapter XLIV deals with couches and swings which are meant for the use of deities, the twice-born, and the members of the other castes. They admit of two sizes, large and small, and are described with all constructional details.

The next chapter (XLV) is devoted to a description of thrones. The royal thrones are divided into four classes, called *prathama* (first coronation), *maṅgala* (auspicious, a stage of coronation), *vīra* (heroic, a stage of coronation) and *vijaya* (victory, a stage of coronation). The divine thrones are also divided into four classes according to the occasion of use : the *nityarchana* throne is for daily worship, the *viseshārchana* throne for special worship, the *nityotsava* throne for ordinary (daily) festival, and the *mahotsava* throne for the great festival. An elaborate account of the general plans, dimensions, ornaments and other architectural details of both the royal and the divine thrones is given under ten types, namely, *padmāsana, padma-kesara, padma-bhadra, śrī-bhadra, śrī-viśāla, śrī-bandha, śrī-mukha, bhadrāsana, padma-bandha,* and *pāda-bandha.* These thrones are specifically assigned to the great Gods, the Buddhist and the Jain deities, as also to the Kings of nine orders.

Chapter XLVI deals with arches. The first three lines where the objects of arches are specified are not well preserved. The tentative translation would run thus : "Arches are made for (the decoration of) the (temples of) gods and the (palaces of) kings, for (ordinary residential buildings, as well as for) the upper portions of all kinds of thrones." In the writer's *Dictionary* numerous references to the arch have been gathered together from other chapters of this text and also from various literature and inscriptions, wherefrom it may be clear that the principles and use of the arch in buildings were sufficiently known to the old architects.

Various forms of the arch are described in this chapter. It may be triangular, circular, crescent-shaped, bow-shaped, or of any other suitable form. Other features and the rules for their construction

are fully described. With regard to the ornamentation, arches are divided into four types : *patra-toraṇa* (foliated arch), *pushpa-toraṇa* (floral arch), *ratna-toraṇa* (jewelled arch) and *chitra-toraṇa* (ornamental arch). Arches are also stated to be supported by leographs which are placed on both sides of the pillars.

Chapter XLVII deals with the open shedyard (*mukta-prapāṅga*), and the (closed) central theatre (*madhya-raṅga*) which is generally erected to serve as a stage in the courtyard of big temples and palaces and is furnished with raised platforms, galleries, and royal seats, etc. Their architectural details, together with various dimensions and ornaments, are described in full. The materials of which they are built are stated to be wood, stone, brick, and metal (*lit.* iron).

The next chapter (XLVIII) is devoted to the description of a decorative device called 'the ornamental (all productive mythic) tree' (*kalpa-vṛiksha*) which is used over the thrones, open shedyards, pavilions and arches. The minute description and detailed measurement of the various parts of the tree are given. Its trunk is stated to have a serpent coiling round it with an expanded five-fold hood. Incidentally, the measurement of the tail, hood, etc., of the snake is given in detail. The tree is also decorated with creepers, leaves and flowers of various colours and forms. Jewels and garlands of pearls are inserted in suitable situation. Figures of deities, demigods, monkeys, etc., are placed in the intervals between the branches.

The primary object of the next chapter (X) is to describe really the crowns of gods, goddesses, kings and queens of various orders. The ceremonies in connection with the coronation of kings are incidentally described. The chapter is, however, named 'Coronation' instead of 'Crowns.' The crowns are divided into twelve types, namely, *jaṭā*, *mauli*, *kirīṭa*, *karaṇḍa*, *śirastraka*, *kuṇḍala* (*kuntala*), *keśabandha*, *dhammilla*, *alaka*, *chūḍā*, *mukuṭa*, and *paṭṭa*. The design, dimensions, ornaments, number of jewels set in every one of these crowns, as also other architectural details and the names of users and the occasion of the use are elaborately described. The height of the crowns varies in accordance with the importance of the divine or royal bearers.

The chapter closes with a recapitulation of the four forms of coronation and the direction as to the conduct of the ceremonial regal procession.

The ornaments of the body and articles of house furniture are described in the next chapter (L) which is the last chapter on architectural subjects. The personal ornaments are divided into four groups. The, *patrakalpa* is so called because it shows foliated decoration. The *chitrakalpa* consists of floral and foliated designs and precious stones. The *ratnakalpa* is made of flowers and jewels and the *miśra-kalpa* consists of a mixture of all the others. All these are suited to the deities. The universal monarch, the first of the nine orders of kings, can put on all these excepting the *patrakalpa*. The *miśrakalpa* is prescribed for all other kings. In addition to these general divisions, a list of some thirty personal ornaments is given with details.

The articles of furniture are divided into seven general groups consisting of lamp-posts, fans, mirrors, wardrobes (baskets and chests), palanquins, balances, and cages. The architectural details including measurement of some fifteen cages are given in full.

Chapter LI on 'Triad' is the first chapter of the sculptural section. This, section opens with a detailed account of the materials of which images are made, the specially sculptural measurement being treated in chapters LV, LXVII. The materials are divided (in Chapter LI) into nine classes, namely gold, silver, copper, stone, wood, stucco, grit (also sugar or gravel), glass and terra-cotta. 'Both the movable and the stationary images should be made with these nine materials; (of these) the metallic substances (i.e. gold, silver and copper) as well as stucco, grit, glass, and terra-cotta are stated to be the materials for the movable images; and the rest (i.e. stone and wood) are known to be for the immovable images.'

The *chitrāṅga*, *ardha-chitrāṅga* and *ābhāsāṅga* are said to be the three kinds of images. That of which all the limbs are made visible is called the *chitra* (high relief), that of which half the limbs are visible is called the *ardha-chitra* (middle relief), and that of which one-quarter limbs are visible is called the *ābhāsa* (low or bas-relief). But the

ābhāsa images may be otherwise made (painted) on a tablet or a wall with five colours.

Idols are made in the erect, sitting, recumbent and dancing postures. The poses, namely, the equipoise, flexion, three flexions, and excessive flexions are referred to in a later chapter (LVII).

After this preliminary account the sculptural details of the images of Brahmā, Vishṇu and Śiva are given in full. Brahmā is furnished with four arms and four faces. Two of his hands are curved in the boon-giving and refuge-offering attitudes. The attributes held in his hands are the water-pot and the rosary, or the large and small sacrificial ladles. He wears a diadem and the matted hair, a strip of bark, an upper garment, and various ornaments. His whole body is of golden colour. His limbs are measured in the large type of ten *tāla* measures of which details are given in a separate chapter (LXV). He is accompanied by his two goddesses, Sarasvatī and Sāvitrī, standing to his right and left respectively, who are measured in the middle ten *tāla*.

Vishṇu is also four-armed, but has one head. His head-gear is the diadem called *kirīṭa*. He wears a yellow garment, while the colour of his body is dark blue. His chest is adorned with the symbol called *Śrīvatsa*. Two of his hands are in the gift-bestowing and refuge-granting attitudes. His attributes are the lotus-flower, the mace, the discus, and the conch-shell. At the back of his head there is an ornamental nimbus. Among numerous ornaments he is adorned with a garland of wild flowers which hangs down to his legs. His limbs are also measured in the large ten *tāla* system. He is also attended by two goddesses, Lakshmī (goddess of prosperity) and Bhudevī (earth goddess). who are measured in the middle ten *tāla*.

Siva, the third member of the Triad, is four-armed and is distinguished by a third eye in the middle of his forehead. Like Brahmā, he wears the matted hair of the ascetic. The figures of *Gaṅgā* (the river Ganges) and the crescent moon are inserted in his head-dress. On the left side of his neck there is the mark of the deadly poison *kālakūṭa*. His dress consists of a tiger-skin reaching down to the knees and a waist cloth. His complexion is red, (elsewhere stated to be white).

Two of his hands are in the attitude of granting a boon and of conferring security. In the remaining two hands he holds an antelope and a tabor or hand-drum. His limbs are also measured in the large ten *tāla* system. He is accompanied by the goddess Pārvatī (mountain-maid) who keeps standing or seated on his left side. The consort is measured in the middle ten *tāla*.

The chapter closes with a brief reference to the pedestals for images which are described elsewhere, and with a direction that the particulars not mentioned here with regard to the carving of these idols should be supplied from tradition (*Sāstra*).

The next chapter (LII) deals with the so-called Phallus which is ordinarily understood to be an emblem of Śiva, the third member of the Triad. But in fact it is a symbol for all the three members of the Triad. Its bottom portion is called here the *Brahmabhāga* and is generally square in shape, the middle portion is called the *Vishṇubhāga* and is octagonal in shape, and the top portion is called the *Śiva-bhāga* and is round in shape. These shapes are interchangeable and the topmost point may be like a bud, leaf or umbrella. It also consists of another essential portion called *Pīṭha* or pedestal upon which it stands.

The popularity of its worship throughout the country is indicated by the fact that there are more than thirty million such emblems, including *Viśvanātha* at Benares, *Somanātha* in Gujarat, *Mahākāla* at Ujjayinī, and the famous ones at Tanjore, Trichinopoly, Rameśvaram, etc. Architecturally they are classified under several types, such as *Śaiva, Pāśupata, Kālamukha, Mahāvrata, Vāma, Bhairava, Samakarṇa, Vardhamāna, Śivāṅka, Svastika*; *Jati, Chhanda, Vikalpa, Ābhāsa*; *Nāgara, Vesara, Drāviḍa*; the four self-revealed ones, namely, *Daivika, Mānusha, Gāṇava* and *Ārsha*; those for personal and public worship; those made singly and in a group; and those named as *Vajra* (diamond), *Suvarṇa* (golden), etc., according to the material of which they are made. All these are described at great length. Various alternative measures are prescribed for each of them; in some cases as many as thirty-six alternative heights are suggested.

The following chapter (LIII) deals with the Altar (*Piṭha*) which symbolically represents Sati (the chaste), the consort of Śiva. The well-known fifty-one *Piṭha-sthāna* are the sacred spots spread over the whole country, where the parts of the body of Satī fell after she had been cut to pieces by the discus of Vishṇu as a result of her quarrel with the gods at a great sacrifice (festival) at her father's house wherefrom her husband was excluded in order to humiliate him.[1]

The sculptural details of altars are given under the following types: *Bhadrapiṭha, Sribhadra, Śrīviśāla,* and *Upapīṭha*; and also under *Nāgara, Vesara* and *Drāviḍa.*

The following female deities or goddesses are next described (in Chapter LIV): Sarasvatī (goddess of learning), Lakshmī (goddess of prosperity), Mahī (the earth-goddess or mother country), Mana-unmādinī (enchantress of mind, the goddess of love), Sāvitrī (consort of Brahmā), Durgā (consort of Śiva) and the seven mothers comprising Vārāhī, Kaumārī, Chāmuṇḍī, Bhairavī, Mahendrī, Vaishṇavī, and Brahmāṇī. The former are superior goddesses and are measured in the middle ten *tāla,* and the latter are inferior and measured in the nine *tāla.* The characteristic features, complexions, attributes, poses, ornaments, crowns, garments, etc., of every one of these are described in detail.[2] The chapter closes with a brief reference to the plumb-lines which are more fully treated in a later chapter.

The next chapter (LV) describes the Jain images. The opening lines give a detailed account of the various kinds of sculptural measurement. The linear measurement is divided into six kinds. *Māna* is the measurement of an image from the foot to the top of the head. *Pramāṇa* is the measurement of breadth. *Parimāṇa* is the measurement of girth or circumference. *Lambamāna* is the measurement along the plumb-lines. *Unmāna* is the measurement of thickness or

[1] In Persian architecture similar altars are the only relics to represent the temple which was not in vogue there (for details see the writer's article 'The Indo-Persian Architecture,' the *Calcutta Review,* 1930, February, pp. 163-179; March, pp. 373-379; April, pp. 22-35).

[2] A reference to the Index may supply a brief summary of the details.

diameter. And *Upamāna* is the measurement of interspace such as that between the two feet of an image. Then the *ādimāna* (primary measurement) refers to the comparative measurement and is divided into nine kinds, as the height of an image is determined by comparing it with the breadth of the temple, with the height of the cella or sanctum, with the height of the temple-door, with the base, with the height of the worshipper, with the height of the riding animal (or with the principal idol in case of auxiliary deities), in *tāla* system, and in cubit. The cubit measure is sub-divided into smaller units such as the *aṅgula*, which admits of four varieties. *Berāṅgula* is the measurement taken by the finger-breadth of the main idol. *Mānāṅgula* refers to the ordinary absolute measurement which is equivalent to eight *yavas* (barley corns) or three-fourths of an inch. *Mātrāṅgula* refers to the measurement determined by the length of the digit and the width of the middle finger in the right hand of the master (worshipper). And *Deha-labdhāṅgula* or *dehāṅgula* refers to one of the equal parts (as in the *tāla* system) into which the whole length of an image is divided.

The Jain images which are measured in the large ten *tāla* have a purely human shape, carved in an erect or sitting posture, and may be stationary or movable. They are furnished with no robes or ornaments, but are placed on a throne decorated with the *makara* arch and the *kalpa* tree. On the chest the *śrīvatsa* symbol is marked in gold. They are attended by Nārada and other sages, as well as by Yakshas, Vidyādharas, Siddhas, Nāgendras, Lokapālas, etc. The twenty-four *Tīrthaṅkaras* are also measured in the ten *tāla* system.

A short account of the Buddhist images is given in Chapter LVI. The Buḍdha image is measured in the large ten *tāla* and is thus of the superior type. He has a full face, a long nose, smiling eyes and elongated ears. His body is fleshy, his chest broad, his belly round, and his arms long. His complexion is white. He wears a yellow garment. He is furnished with the *ushṇīsha* or protuberance of the skull, which is a peculiar mark of Buddha. Another Buddhistic mark is the *aśvattha* or ficus religiosa, which, along with the *kalpa* or mythic

wonder-tree, is a characteristic feature of the thrones on which Buddhist figures are placed in an erect or sitting posture.

The images of the sages are described in the next chapter (LVII). They comprise the seven well-known patriarchs, namely Agastya, Kāsyapa, Bhṛigu, Vasishṭha, Bhārgava, Viśvāmitra. and Bharadvāja. Agastya is bright blue in complexion, Kāsyapa yellow, Bhrigu dark or black, Vasishṭha red, Bhārgava brownish, Viśvāmitra red, and Bharadvāja yellow. Agastya is measured in the seven *tāla*, Kāśyapa and Bhṛigu in the eight *tāla*, and the rest in the nine *tāla*. They are represented in a purely human shape, being two-armed and two-eyed. They wear yellow garments and the sacred thread, and are distinguished by the matted hair of the ascetics. In their two hands they hold a staff and a book. Of Agastya it is stated that he is corpulent and hump-backed.

Chapter LVIII deals with the semi-divine beings and demons. They are classified under four main groups, namely Yakshas, Vidyādharas, Gandharvas, and Kinnaras, with Rakshasas and Nigrahas as two sub-classes of Yakshas. Rakshasas are evil spirits, while Nigrahas are supernatural beings of a benevolent or inoffensive disposition. Yakshas act as attendants to the gods. Vidyādharas are chowry-bearers of the gods and are a kind of fairy possessed of magical powers. Gandharvas are celestial choirs and are celebrated as musicians. Kinnaras are hybrid beings. Their legs are like those of an animal, the upper body is like that of a man, the face is like that of Garuḍa, and the arms are provided with wings. They hold a lute, possess the beautiful hue of a flower, and are adorned with a diadem and a red lotus. The colour of the Yakshas is dark blue and yellow, and that of the Vidyādharas dark red and yellow. The right legs of Yakshas are cross-shaped (*svastika*) and the left bent. In one hand they hold the chowries and the other is kept touching the ground. Yakshas are placed on a seat with plough-shaped legs stretched backward and forward, and the hands are kept resting on the knees and stretching towards the gate-house. Gandharvas are carved in a sitting or erect posture and are furnished with lutes, etc. All these have two arms and two

eyes and are adorned with the *karaṇḍa* crown. Yakshas and Vidyādharas are measured in the nine *tāla*.

The next chapter (LIX) describes the devotees who are furnished with human features but possess superhuman measures. They are divided into four classes according to the four stages of spiritual advancement known as *Sālokya* (dwelling in the same world as the deity), *Sāmīpya* (dwelling in the vicinity of the deity), *Sārūpya* (being in close fellowship with the deity) and *Sāyujya* (being united with the deity). The images of the *Sālokya* class of devotees are measured in the large type of nine *tāla* system, those of the *Sāmīpya* class in the small type of ten *tāla*, those of the *Sārūpya* class in the middle type of ten *tāla*, and those of the *Sāyujya* class in the large type of ten *tāla*.

The riding animals of gods, of the Triad in particular, called *Vāhana* (conveyance) are described in the next four chapters. The sculptural details of the goose, who is the conveyance of Brahmā, are given in Chapter LX. It is white all over with red legs and a golden beak. It is measured in the two *tāla* system. The chapter closes with a statement that rows of geese should be beautifully carved or painted in the temples of gods and mansions of Brahmans and kings; they are figured on the entablature, architrave, finial, recess (nest), and neck of those buildings.

Chapter LXI opens with a lengthy discussion on the application of the rules for verification (*shaḍvarga*) of various alternative measures suggested in connection with the riding animals. Garuḍa, the conveyance of Vishṇu, who is the primary object of the chapter, is described in very great detail. He is a mythical being. Garuḍa is figured partly as a human creature and partly as a bird. He is provided with feathers, wings painted in five colours, and a beak; but, on the other hand, the description refers to his arms, ears, and hair. He wears various ornaments including the *karaṇḍa* diadem and is gorgeously painted in a great variety of colours. He assumes a terrific appearance. He is figured in an erect or sitting posture and as meditating on Vishṇu with joined palms. His limbs are measured in the nine *tāla* system.

The next chapter (LXII) describes the bull Nandin who is the animal of Śiva. Its image, which may be either recumbent or erect, is placed facing the Śiva temple on a pedestal, either inside the shrine, or in a pavilion in front of the temple, or at the door. He is white in colour, but his four legs, hoofs and ears are red. He is covered with a tiger-skin and wears garlands at the neck, and foot-rings or anklets. He is not measured in any *tāla* system, but various absolute and comparative measures have been prescribed. The bull is made, solid or hollow, of metals, stone, wood, glass, gems, stucco, baked clay, and grit.

The lion is the next riding animal described (in Chapter LXIII). The Mountain-Maid Pārvatī rides on him. He is made in an erect, sitting, or recumbent posture. His four legs are like those of the tiger. His colour is white but his mane should be red. His nails and teeth are crescent-shaped. He, also, is not measured in any *tāla* system. His tail is generally equal to his height.

Chapter LXIV proposes to give a general description of all images particularly of the attendant deities of the Vishṇu temple. But it actually supplies a general resumé of all kinds of architectural and sculptural measures and of the rules concerning the verification of alternative measures, which have been repeatedly referred to both in the architectural and sculptural sections. The comparative measurement is distinguished into twelve kinds, as it is compared with the Phallus, the main Vishṇu image, the width of the sanctum, the breadth of the main temple, the door, the rafter (*vaṁśa*), the basement, and the pillar, as also in cubit, in the *tāla* system, in comparison with the worshipper, and in *aṅgula* of which four varieties have also been mentioned in Chapter LV. The various sub-divisions of each of these measures, illustrations of their application, and the effect of adopting a particular system are discussed in great detail.

Chapters LXV and LXVI supply minutest details of the large and the middle types of the ten *tāla* system. Under the former the measure of one hundred and fifty-four parts of the body is given. The former is employed in measuring superior gods and the latter for goddesses,

The details of other *tāla* measures have been already given in various chapters. Incidentally, Chapter LXVI supplies a general clue to the exact features of the various important limbs. The face is stated to be oval or shaped like the egg of a hen. The eye-brows should be shaped like a bow, the eyes like a fish, the nose like a sesame flower, etc. the nostrils like a bean, etc.

The next chapter (LXVII) deals with the plumb-lines which are drawn through the body of an image in order to find out accurately the perpendicular and the horizontal measurement of and the distance between different parts of the body. The construction of the boards between which the image is to be placed and of the plummet is described in detail. As many as eleven perpendicular plumb-lines are referred to. The subject has become all the more complicated as the three postures, the erect, sitting, and recumbent, and the four poses, namely, the equipoise, slight flexion, three flexions and excessive flexions, are also taken into consideration in ascertaining the measures along and between the eleven plumb-lines. Thus the variation of the measures of a figure is carefully considered in each case.

The next chapter (LXVIII) deals with the casting of images in wax. The chapter opens with an enumeration of the names of phalli and ascetics, as well as of architects. So far as the casting is concerned all kinds of images, temporary or permanent, stationary or movable, are moulded in wax. The process slightly varies according to the materials of which an idol is made. Generally a half of the image is covered with a thin copper leaf or melted iron, and the wax is laid two or three *aṅgulas* deep; and the other half is covered with earth. The metallic portion is washed in water. Thus in casting images in metals wax is melted and poured out of the mould and defects are removed with cloth. Metal images are first made of wax and coated with earth; gold and other metals are purified and cast into the mould. For images made of earth rods of wood or metal are inserted in them.

Chapter LXIX deals with the defects of the limbs. It is laid down that no part of a building should be larger or smaller than what is prescribed. The evil consequences of a defective construction threaten

the king, the kingdom, the master, and the maker. The penalties for defective construction are enumerated with reference to architectural objects, but nothing is specifically stated regarding the sculptural objects

The concluding chapter (LXX) deals with the chiselling of the eyes of an image, which is the final function. The purification and setting of precious stones in the images and phalli are also mentioned. The chapter closes with a statement that this science of architecture and sculpture was originally described by Brahmā, Indra, and all other gods, and that the text has been compiled on the basis of these authorities.

This brief outline of the chapters, if read with reference to the Index, where under each term all necessary information has been gathered together, with great labour, may supply the gist of the summary without which an average reader might find it rather difficult to form a complete and connected idea by a single reading of the text or the translation.

Relation with other works

The other existing texts, mostly in manuscripts, numbering some three hundred, of which an account has been given in Appendix I of the writer's *Dictionary of Hindu Architecture*, deal with some of those subjects outlined in the preceding section practically in the same manner as in the *Mānasāra*. Some of these texts have been compared rather elaborately in the writer's *Indian Architecture* and the discussion need not be repeated here. It will be perhaps enough to refer to the conclusions only.

The *Mayamata-śilpaśāstra* attributed to one Gannamāchārya is the most well-known text next to the *Mānasāra*. It has been shown that in respect of the titles of chapters, their sequence and contents the *Mayamata* and the *Mānasāra* are identical. A portion of the manuscript of the *Mayamata* contains the title *Mānasāra* and this fact has led to the assumption that the *Mayamata* is based on and is an abridgement of the *Mānasāra*. The fact that one Mayamata is

included in the list of thirty-two authorities mentioned in the *Mānasāra* itself does not present much difficulty in accepting this view, because Mayamata like Manu or Mānasāra is apparently a generic name and the treatise catalogued under the title *Mayamata-śilpa-śāstra* need not necessarily be ascribed to the authority mentioned in the *Mānasāra*.

The *Aṁśumadbheda* of Kāśyapa contains eighty-six chapters of which forty-seven are devoted to sculpture and are similar to the first fifty chapters of the *Mānasāra*. The remaining thirty-nine chapters of the former appear to be an elaboration of the remaining twenty chapters of the latter.

The treatise which is intended by its authors to be the most authentic is naturally the one attributed to Viśvakarman (the creator of the universe), the heavenly architect. There appear, however, to have been more than one treatise bearing the name of Viśvakarman: one being called *Viśvakarma-prakāśa*, or *Viśvakarma-vāstuśāstra*, and another *Viśvakarmīya-śilpa* or *Viśvakarmīya-śilpaśāstra*. The first deals in thirteen chapters with directions on the building of houses, the making of roads, tanks, etc., similar to those given in the *Mānasāra*. The second deals with sculptural objects in a similar manner, but in an abridged form, and appears to have been influenced by the *Mānasāra* through the *Mayamata*.

Treatises like the *Śilpa-śāstra* of Maṇḍana and the *Samarāṅgaṇa-Sūtradhāra* are comparatively modern texts, some of which treat the subjects of their requirement in an abridged form while others in an enlarged form. Although they do not expressly say so, yet there is convincing reason to believe that they are but compilations. One such text is actually named *Saṁgraha* (compilation) and expressly acknowledges its indebtedness to twenty-one authorities including the *Mānasāra*, the *Mayamata* and others. It specifically states that such and such chapters have been compiled from such and such authorities.

Thus it has been concluded in the writer's *Indian Architecture* that "most of the architectural treatises, whether or not

ascribed to an author, historical or mythical, are but compilations. Some of these have actually acknowledged the sources drawn upon, while others have not." The *Mānasāra* itself is a compilation but it is the standard work on the subject because it is the most complete, scientific and probably the oldest extant record. It has thus influenced all others directly or indirectly.[1]

The treatment of architectural and sculptural objects is of historical character rather than of practical nature in the non-architectural treatises. Thus in the Vedas, the Buddhist scripture, the epics, the classical poetical works, the astronomical, medical and historical treatises and in the Purāṇas and the Āgamas the treatment of the subject varies from mere mention of certain architectural terms to the elaborate descriptions of town-planning, temples, palaces, residential houses, classification, etc., of pillars and their mouldings. But nowhere is to be found actual measurement and such other constructional details.

In regard to the Vedic literature, after examining the frequent references it has been shewn in the writer's *Indian Architecture* that the Vedic Indians " were not ignorant of stone forts, walled cities, stone houses, carved stones, and brick edifices."

The canonical books of the Buddhists more elaborately refer to the arrangement of villages, towns, forts, buildings of various types and articles of furniture. Thus in the *Vinaya* texts, *Mahāvagga* (I 30, 4), *Chullavagga* (VI 1, 2), the Blessed one (Buddha) himself says " I allow you O Bhikkhus, five kinds of abodes—*Vihāra* (monastery), *Ardha-yoga* (bungalow), *Prāsāda* (storied mansion), *harmya* (palace), and *Guhā* (cave temples)." Interesting details follow. Houses were built comprising dwelling-rooms, retiring rooms, store-rooms, service-halls, fire places, closets and cloisters, wells, bath rooms and a bathing place for hot sitting baths, kitchens, etc. Articles of furniture include bedsteads, couches covered with canopies, chairs of various kinds, sofa, arm-chair, cushioned chair, etc., carpets, rugs,

[1] See the writer's *Indian Architecture*, pages 109, 99–132.

floor cloth, curtains, pillows of various sizes, shapes and materials, mosquito curtains, handkerchiefs, and not even excluding the spitoon.[1]

The Epics, the *Rāmāyaṇa* and the *Mahābhārata*, furnish copious descriptions, but no constructional details, of cities, storied buildings, balconies, porticos, arches, enclosing walls, flights of stone masonry, steps for tanks, and a variety of other structures.

The foregoing works, namely the Vedic literature, the Buddhistic scripture, and the Epics have obviously supplied the basis of Mānasāra's compilation which has been certainly put into a scientific form by the personal observation and actual measurements of the then objects by its author. Thus standardised, the *Mānasāra* has influenced directly or indirectly the subsequent works where the subjects were casually treated.

The *Purāṇas* and the *Āgamas* are huge compilations gathered together from various sources dealing with heterogenous subjects including architecture and sculpture. Although casual references are met with in all the *Purāṇas*, nine of them have treated the subject more systematically, and have materially contributed to the later *Śilpa-śāstra* texts and other works. The *Matsya-purāṇa*, for instance, has eight comprehensive chapters dealing in great detail with architecture and sculpture. In one of these chapters accounts are given of eighteen ancient architects. One chapter is devoted to the columns, which are divided into five classes as in the western system, and their component parts into eight mouldings exactly like those of the Græco-Roman orders. Buildings are classified under three heads and twenty types, of which plans, general measures, pavilions, halls, storeys, steeples and cupolas are referred to. Building materials are discussed in a separate chapter. Three chapters are devoted to the description of images, which includes a reference to the *tālamāna* also. In the other two chapters the Phalli and Altars are described.[2]

The *Skanda-purāṇa* has devoted three chapters to the subject. One of these refers to the laying out of a large city. In another

[1] For details see the writer's *Indian Architecture*, pp. 9–16.

[2] *Ibid.*, pp. 17, 114–6.

mention is made of the construction of a golden hall and three chariots and the names of the architects. In another chapter the details of a special pavilion for the wedding of a royal princess are described

One of the four chapters of the *Garuḍa-purāṇa*, devoted to the subject of architecture and sculpture, deals systematically with all the three classes of the buildings, namely, residential, military, and religious, as well as the laying out of pleasure-gardens and pavilions therein. In one chapter are described the dwelling-houses, forts and fortified towns, temples and monasteries together with garden-houses. Another deals exclusively with religious buildings. Two others are devoted to sculpture, one dealing with rules relating to the construction of an image, and the other with installation of images in temples.

There are sixteen chapters in the *Agni-purāṇa*, three dealing with architecture and thirteen with sculpture. One chapter deals with town-planning, two with temples and residential buildings. Of the remaining thirteen chapters one is devoted to the description of the sun-god, one to the ten incarnations of Vishṇu, two others also to Vishṇu under the name of Vāsudeva, one to the guardian angel of the house, one to the goddess of prosperity, two to the female deities in general, four to the Phallus and Altars, and the remaining one to the stone god (Śālagrāma) and others.

The *Nārada-purāṇa* practically completes the *Purāṇas*' contribution to architecture by describing in a single chapter the construction of pools, wells and tanks, as well as temples. The *Brahmāṇḍa-purāṇa* also describes in a single chapter the construction of temples and residential buildings. The *Vāyu-purāṇa* also in a single chapter describes the construction of various temples upon mountain-tops many of which still exist on several peaks of the Himalaya and the Vindhya ranges.

Of the four chapters of the *Bhavishya-purāṇa* devoted to the subject, three deal with sculpture and one with architecture proper comprising the construction of temples. The most striking feature of this *Purāṇa* is that the number, names and other details of the

buildings described in it are identical with the twenty types found in the *Matsya-purāṇa* and in the *Bṛihat-saṁhit* of Varahamihira.[1]

The *Bṛihat-sa hitā*, usually classed under astronomical works, is but a semi-*Purāṇa*, dealing as it does, with heterogenous subjects like the *Purāṇas* themselves. In this treatise there are five chapters wherein both architecture and sculpture are treated with a master hand. The chapters open with a definition of architecture and the author goes on describing briefly, but succinctly and to the point, the suitable building-sites, testing of soil, general plan, comparative measures of storeys and doors, and carvings thereon, and other important parts of a building. Twenty types of buildings referred to above are next described. Preparation of cement and paste is described in a separate chapter. The house-furniture, including bedsteads, couches and seats, are described in another chapter. In a single chapter important sculptural matters and images are described. By a detailed comparison it has been shewn that the architectural and sculptural portions of this treatise must have been based on the *Mānasarā*.[2]

The *Āgamas* like the *Purāṇas* are encyclopaedic works dealing with heterogenous subjects, the ultimate object in both cases being the worship of the Triad. The twenty-eight chief *gamas*, like the eighteen great *Purāṇas* deal incidentally with architectural and sculptural objects. But the contribution of the former is much more extensive and valuable to these subjects.

Some of the *Āgamas* to all intents and purposes are but architectural treatises. The *Kāmikāgama*, for instance, devotes sixty chapters out of a total of seventy-five to architecture and sculpture, and its treatment of the subjects can hardly be surpassed by that of an ordinary architectural treatise. Just like a *Silpa-śāstra*, it begins systematically with the preliminary matters, such as the testing and preparation of soil, selection of sites, scheme of measurement, finding out of the cardinal points by means of gnomons for the orientation of

[1] For references and details see the writer's *Hindu Architecture*, pp 19-22, 114-120.

[2] *Ibid*., pp. 22, 117-118, 161-164.

buildings, and the site plans. Buildings proper are described under twenty types, just as in the *Matsya* and *Bhavishya Purāṇas* and the *Bṛihat-saṁhitā*. But unlike the *Purāṇas*, there is in the *Kāmikāgama* a discussion of architectural matters under certain highly technical classifications, such as the styles Nāgara, Vesara and Drāviḍa; shapes, masculine, feminine and neuter; pure, mixed and amalgamated as based on one, two or more materials ; Saṁchita, Asaṁchita and Apasṁchita otherwise known as Sthānaka, Āsana and Śayana, which, in case of temples, depend on the erect, sitting, and reclining postures of the image. Another very technical matter referred to is the *āyādi* formula used in selecting the right proportions. By an elaborate comparison it has been shewn that this and the other *Āgamas* must have been based for these subjects on the *Mānasāra*.[1]

There are thirty-seven chapters in the *Karaṇāgama* which deals with architecture and sculpture exhaustively. It makes a distinct addition to the *Āgamas*' contribution to the later *Silpa-śāstra* texts. It contributes two valuable chapters dealing in detail with the nine and ten *tāla* systems. This also closely follows the *Mānasāra*.[2]

The *Śuprabhedāgama* has devoted only fifteen chapters to architecture and sculpture. But its uniqueness consists in the fact that it has quite successfully summarised all important matters in a comparatively small space, and in respect of brevity, explicitness and precision it surpasses even the *Bṛihat-saṁhitā* of Varāhamihira. Its similarities with the *Mānasāra* has shewn that it must have drawn upon a text on *Śilpa-śāstra*.[3]

So far as the lists of buildings are concerned it w . be noticed that the *Mānasāra* contains in twelve classes ninety-eight types of buildings, the *Agni-purāṇa* has in five classes forty-five types, the *Garuda-purāna* also has in the same five classes the same forty-five types, the *Matsya-purāṇa* has in three divisions twenty types, the *Bhavishya-purāṇa* and the *Bṛihat-saṁhitā* have left out the broader

[1] See the writer's *Indian Architecture*, pp. 23-28, 118-133.

[2] *Ibid.*, pp. 26-27, 119-133.

[3] *Ibid.*, pp. 27-28, 110, 113, 117-119.

divisions but retained the same twenty types as in the *Matsya-purāṇa.* The *Kāmikāgama* also contains in three divisions of various kinds twenty types, and the *Suprabhedāgama* having left out all the minor divisions refers to the three styles (Nāgara, Vesara and Drāviḍa) which comprise ten types of buildings. It will be further noticed that the various broader divisions, such as *Śuddha* (of one material) *Saṁchita*, *Sthānaka*, *Jāti*, *Puṁliṅga* (masculine), etc., of the *Mānasāra* are repeated in the same terms and in the same senses in the *Āgamas*. The most important division into the three styles is also preserved intact in the latter works. These are purely architectural classifications, and they are not taken into consideration in the non-architectural treatises like the *Purāṇas* and the *Bṛihat-saṁhitā*. Even the broadest division into storeys under which the *Mānasāra* describes the buildings in twelve or thirteen chapters has lost its prominence in the latter works.

After the styles, columns or orders are the most important matter for consideration. Like the five Græco-Roman orders, Doric, Ionic, Corinthian, Tuscan, and Composite, columns in ancient India also were divided into five main orders or classes. In the *Mānasāra* they are called Brahmakānta, Vishnukānta, Rudrakānta, Śivakānta, and Skandakānta. These divisions are based on the general shapes. With respect to dimensions and ornaments the five orders are called Chitrakarṇa, Padmakānta, Chitra-skambha, Pālikā-stambha, and Kumbha-stambha.

Among the *Purāṇas* only the *Matsya* refers to the subject, wherein as well as in the *Bṛihat-saṁhitā* the five orders are called Ruchaka, Vajra, Dvivajra, Pralīṇaka, and Vṛitta. Of the *Āgamas*, the *Suprabhedāgama* contains the essential details, according to which the five orders are Śrīkara, Chandrakānta, Saumukhya, Priyadarśana, and Śubhaṅkarī ; the last is stated to be the Indian Composite order, being a compound of Saumukhya and Priyadarśana, just as the Græco-Roman composite order is a compound of Corinthian and Ionic.

The component parts of the column, which are common to all orders, vary in number. Thus in the *Mānasāra*, which of almost all the

treatises deals separately with the pedestal, the base, and the entablature, mention is made in connection with the pillar proper or the shaft of five mouldings. The *Suprabhedāgama* describes two sets of seven mouldings. The increasing number of mouldings reached the significant figure of eight in the *Matsya-purāṇa*, the *Bṛihat-saṁhitā* and the *Kiraṇa-tantra*, and bears the very same eight names. It will be noticed that the component parts of the Græco-Roman orders are also eight in number, most of which are, however, given more than one name. It will be further noticed that mention is made in the *Mānasāra* in connection with the pedestal, the base and the entablature, of some forty-seven mouldings, and that such comparative measure of the pedestal, the base, and the entablature and such elaborate classification and description of them as are given in the *Mānasāra* are to be found neither in the *Purāṇas* nor in the *Āgamas*. Thus in respect of the names of the columns, the number of their subservient parts called mouldings, also the pedestal, the base and the entablature, as well as their comparative measure, the *Mānasāra* will occupy the first place among the avowedly architectural treatises and the architectural portions of the *Purāṇas* and the *Āgamas*.

Of the other non-architectural works the *Arthaśāstra* of Kauṭilya devotes some seven chapters to the subject, containing interesting descriptions of forts, fortified cities, town-planning, and military and residential buildings. The *Śukra-nīti* deals with both architectural and sculptural objects, wherein are also found certain rules and structural details along with descriptions of forts and fortified cities, of temples and other kinds of buildings, and of various kinds of images including a reference to the seven *tāla* measure and the direction regarding the repair of broken images.[2]

In the *Harsha-charita* of Bāṇa it is stated that 'the palace had besides the harem always more than three courtyards, the outer one being for people and for state reception, the next inner one for chiefs and nobles and the third one for intimate persons only. The

[1] For details see the writer's *Indian Architecture*, pp. 125-129, 121-124, 99-120.

[2] *Ibid.*, pp. 29-30.

palaces were stately buildings. The columns and walls were ornamented with gold and precious stones. There was usually a several storeyed building with inner gardens of flower-beds and large fruit trees."[1] The *Rājataraṅgiṇī* of Kalhana refers frequently to architectural objects like castles, monumental buildings and monasteries.[1]

The *Gārga-saṁhitā* deals with a large number of purely architectural subjects, namely courts, compounds, compartments, rooms, and dimensions and situation of doors in houses. The *Sūrya-siddhānta*, the *Siddhānta-śiromaṇi* and the *Līlāvatī* deal in detail with a technical matter, namely the gnomons which are used for finding out cardinal points in connection with the orientation of buildings.[2]

The poetical works of Kālidāsa, Bhavabhuti and others refer occasionally to architectural matters. In the *Vikramorvaśī*, for instance, mention is made of a flight of stairs made like the waves of the Ganges. The *Uttara-Rāmacharita* refers to the preparation of cement, and to Nala, son of the heavenly architect Visvakarman, who built the bridge joining India with Ceylon. The *Mṛichchhakaṭika* describes in detail the gatehouses, the courts and compounds of the heroine's palace, and refers to many other architectural matters.[2]

The *Nirukta* of Yāska refers to masonry houses. In the grammar of Pāṇini reference is made to edifices, pillars, brick, sculpture, etc. In the *Amarakosha* and other lexicons lists of several architectural terms are met with.[2]

These minor non-architectural treatises have certainly drawn upon the standard architectural treatises, the *Purāṇas*, the *Āgamas*, the Epics, the Buddhist scripture or even upon the Vedic literature.

In the light of all these facts, merely to deal with the question in its aspects as they concern the *Mānasāra*, it seems impossible to resist the conclusion that there was a relation of indebtedness between the *Mānasāra* and the other works, both architectural and non-architectural. Except in a few instances, it is, however, difficult to

[1] *Indian Architecture*, pp. 30-31. [2] *Ibid.*, pp. 32-34.

state definitely that the *Mānasāra* is the debtor or creditor t this or that work in respect of this or that matter.

Similar difficulties arise in regard to the exact relation between the architectural work of the Roman architect Vitruvius and the *Mānasāra*, although scholars and critics have admitted the writer's conclusion, after an elaborate examination and minute comparison, that there exist striking similarities between these two standard works.[1]

Age of compilation

So far as the date of the *Mānasāra* is concerned the indications to the period discussed at great length elsewhere[2] must await final decision till the question of the identification of the author and the treatise have been satisfactorily settled. Up till now no tangible argument or proof has been found as to the possibility of the treatise being the compilation of a number of authors, instead of a single individual, who might have added to it from time to time until it has grown up to its present complete form and thus spreading its time to a long period. Nor has it been possible to say definitely what the title was intended to imply. In the treatise itself *Mānasāra* has been used in three distinct senses,[3] namely, an individual author of an unknown parentage and time; a class of sage-artists who deal with the essence of measurement which is the derivative meaning of the term *māna-sāra*; and, lastly, a treatise containing methods and principles, as well as rules and regulations and illustrative examples of all the principal architectural and sculptural objects for the construction of which the essence of measurement is required.

The external evidence referring to the treatise and the author is also very meagre. The avowedly architectural compilations like the *Saṁgraha*[4] referred to above, which have expressly quoted from

[1] For details see the writer's *Indian Architecture*, pp. 134–159, and Opinions and Reviews quoted at the end of this volume.

[2] See the writer's *Indian Architecture*, pp. 160-198.

[3] See the Preface to the above, pp. ii–iv.

[4] See this preface, pp. xlvii—xlviii.

the *Mānasāra*, are also of uncertain authors and dates. The reference of the *Agni-purāṇa*, of which also the date of compilation is not quite certain, is very ambiguous. It is stated therein that "above that should be raised a platform together with its neck *either* for the discharge of refuse *or* according to the *Mūnasāra*" (not *Mānasāra*.)[1] A similarly ambiguous reference is made to *Mānasarpa*, not *Mānasāra*, as an architect, in two late inscriptions.[2] The only other external reference to the name of Mānasāra in a clearer term is in the *Daśa-Kumāra-charita* of Daṇḍin of probably the sixth century A.D. Therein Mānasāra is repeatedly mentioned in unmistakable terms as the King of Mālava (Malwa) with whom was engaged in war King Rājahaṁsa of Magadha (Patna); the latter was the father of Rāja-vāhana, the chief of the ten princes or Daśa-Kumāra after whom the fiction is named.[3]

This King Mānasāra is stated to be the father of one of the ten princes, who is, however, not even the principal character of the fiction. There are no doubt historical facts concealed in a fictitious work. But it is not easy to sift facts from fiction. Historical facts extricated from the complexities of such a fiction can hardly supply the necessary clue to the solution of the problem. Although some vague conclusion has been inferred from the circumstantial evidence about the period in which Daṇḍin, the author of the *Daśa-Kumāra-charita*, lived, no such vague idea even is available about the period or periods in which the more or less imaginary incidents described in the fiction might have taken place. Besides, it must be noted that King Mānasāra was not the hero nor even one of the chief characters of the fiction. This Mānasāra, the father of one of the ten princes who are the principal characters, is stated to have been engaged in a war with King Rājahaṁsa, the father of the chief prince, that is all. There is in the fiction practically no direct or indirect reference made as to the nature of interest

[1] See the writer's *Indian Architecture*, p. 169.

[2] *Ibid.*, pp. 4, note 2; 150, note 5; 171, note 2; 176, note 1.

[3] *Ibid.*, pp. 170-171, 197-198.

which King Mānasāra might have been in the habit of taking in literary or artistic matters; it must, however, be admitted that there was no real occasion for such a reference, but the author, Daṇḍin, himself is held, in his recently discovered works, the *Avanti-Sundarī-Kathā* in prose and the *Avanti-Sundarī-Kathāsāra* in verse, to be well learned in architecture of royal and divine structure. In this connection another incident must be taken into consideration. Neither in the three styles mentioned in the treatise *Mānasāra* under three geographical names (Nāgara or northern, Vesara or eastern, and Drāviḍa or southern), nor in the ten types of the most gorgeous buildings bearing again geographical names and provincial divisions (Pāñchāla, Drāviḍa Madhyakānta, Kāliṅga, Virāṭa, Kerala, Vaṁśaka, Māgadha, Janaka, and Sphurjaka)[1] is included Mālāva, which was presumably the capital city and provincial kingdom of King Mānasāra of the fiction. In the circumstances it would be doubly unwarranted to take any decision as to the possibility or otherwise of King Mānasāra's direct patronage or indirect instrumentality in the production of the standard treatise on architecture which, as its title would seemingly indicate, might have been named after him.

Those who are, however, inclined to connect the treatise *Mānasāra* with this King of Malwa, would assign the treatise to the seventh century, because the author of the fiction, Daṇḍin, was a contemporary of another author Bhāravi, who is mentioned in an inscription of A.D. 634 and also of Harsha of Kanauj who reigned from A.D. 606-648.

On the other hand, in view of the several facts discussed at great length in the writer's *Indian Architecture*, the reader may be inclined to consider more seriously the other items of evidence which are undoubtedly more authenticated and substantial, though circumstantial, including those regarding the connection of the *Mānasāra* with the *Matsya-purāṇa* (probably of A.D. 450) and the *Bṛihat-saṁhitā* (probably of A.D. 550).

Lastly, those who have admitted the striking similarities between the treatise of Vitruvius (of about 25 B.C.) and the *Mānasāra* will

[1] For the provinces implied by these see the writer's *Indian Architecture*, pp. 173-175.

have to await the missing link in order to connect these two standard treatises. It is, however, possible to think that instead of any one being directly influenced by the other, both might have drawn upon a common source, namely some unknown work or works, or some floating traditions. In the event of a direct relation being established, the date of the *Mānasāra* may be a few centuries earlier or later than Vitruvius whose treatise was probably composed twenty-five years before the Christian era.

The writer, however, takes the liberty to conclude this preface by reiterating the fact that this is, like the medical works, the most practical of all Sanskrit treatises, and with the hope that a trial may be given to its methods and principles, its rules and regulations, because the foreign imitation in architecture for a millennium has proved more or less unsuccessful and uneconomical.

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February 6, 1933.

ARCHITECTURE OF MANASARA

CHAPTER I

THE CONTENTS

1-2. He (Brahmā), while causing the creation, the preservation, and the destruction of the worlds, brings forth earth, water, fire, air, and the sky. I bow to (His) lotus-like feet kissed by the waving lines of bees-like crowns of the kings of various gods.

3-4. The science of architecture, enunciated by all the great sages beginning with Him (Śiva) who carries the Ganges on His head, the lotus-born (Brahmā), the lotus-eyed (Vishṇu), Indra, Bṛihaspati, and Nārada, has been elaborated by the sage Mānasāra having made the subject-matter even more than complete.

5-6. In the first place (is described) the system of measurement preceded by (an account of) the qualifications of architects; then (comes) the classification of *vāstu*[1], (and) likewise the examination of the soil.

7-8. Then is described the selection of the site, the rules for erecting the gnomon, (and) the arrangement of ground-plans for assigning the quarters of gods and others.[2]

9-10. So also the rules regarding (architectural) offerings (to deities) and the details of (various) village-schemes, as also of the

[1] *Vāstu* comprises four things, namely, ground, building, conveyance, and couch (see chapter III, 3)

[2] Including divine and semi-divine beings, as well as demons.

town-plans, together with the regulations regarding the dimensions of storeys.

11-14. Similarly the rules for laying the foundations as well as the details of pedestals, the rules for bases, as also a description of pillars, of entablatures, and of wood joinery, similarly, the general description of mansions, together with the details of the one-storeyed buildings.

15-20. The directions for the second storey, the description of the third storey, the rules for the fourth storey, the description of the fifth storey, of the sixth and the seventh storeys, and also of the eighth and the ninth storeys, the rules for the tenth storey, and an account of the eleventh storey, and the description of the twelfth storey, and the details of the courts (of a compound), the (temples of) attendant deities, and the description of gate-houses.

21-22. The description of the *maṇḍapa* buildings (i.e., pavilions) and of the *śālā* buildings (i.e., halls) together with the arrangement of buildings (in a compound) and the directions for the first entry into the house.

23-26. The directions for the location of doors and the description of door-measurement, so also the details of royal palaces, and an account of royal courts, and characteristics of kings, and the description of chariots, conveyances, etc., and the details of couches and the description of thrones.

27-28. The details of the arches, the central theatres and the ornamental trees, the description of (crowns and) coronations, as also an account of all kinds of ornaments (and articles of furniture).

29-30. The description of the images of the Triad consisting of Brahmā and others, the details of the phallus and the description of (its) pedestal, similarly an account of the female deities.

31-32. The description of the Jain images and of Buddhist images, as also the description of the images of sages, and the

description of the images of the (demi-gods,) Yakshas, Vidyādharas and others, and of the devotees.

33–34. The description of the images of various riding animals of Brahmā and other deities, and the rules for images (in general) and an account of the large type of the ten *tāla*[1] measurement.

35–38. The description of the intermediate type of the ten *tāla* system for the measurement of the images of female (deities), the details of the plumb-lines, as also the rules for casting (images) in wax, similarly, is given an account of all defects of the component parts and (the directions for) chiselling the eyes (of images); all these descriptions are given in order.

39–40. This treatise composed by the professors of architecture[2] was named (after) the sage Mānasāra. This has been accepted, complete as it is in all details, by the best among the teachers of the leading architects.

Thus in the *Mānasāra*, the science of architecture, the first chapter, entitled :

The contents.

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[1] A technical term implying a kind of sculptural measurement.

[2] More literally 'by the sages known as Mānasāra' (literally essence of measurement), i.e., by those who specialize in mensuration or measuring which is a very important feature of the science of architecture. The term *mānasāra* has been used in three different senses: (i) as a generic name of architects, (ii) as the title of the treatise, and (iii) as the individual name of its author or compiler, *cf.* chapter LXX, concluding lines, chapter XXXIII, 2, LXVIII, 11, chapter LXIX, 216. As the possible name of an architect it is mentioned in the Holal inscription (Epigraphist's Report, 1914-15, p. 90) and the *Agni-purāṇa* (chapter XLII, 127), and as the name of a king in the *Daśa-kumāra-charita* (ed. Kale, pp. 4, 12, 43). For more details see the writer's *Indian Architecture*, pp. 2, 3, 4.

CHAPTER II

THE QUALIFICATIONS OF A CHITECTS AND THE SYSTEM OF MEASUREMENT

1. I shall (now) describe the qualifications of architects (and) the system of measurement in order.

2. From the supreme Śiva (emanate) the creator Brahmā and also Indra.

3-4. That He is the great architect of the universe is proclaimed by God Himself. It is He who as the architect of the universe creates the world again.

5. This Viśva-karman (the architect of the universe) is born with four faces like those of Brahmā and others.

6. I shall separately mention the four names (of the faces) beginning with the eastern one.

7-9. Of those, the eastern face is known by the name of Viśva-bhū (progenitor of the universe), the southern face (is known by the name of) Viśva-vit (knower of the universe), and similarly, the northern face is named Viśvastha (resident in the universe), (and) the western face (bears) the designation of Viśva-srasṭar (creator of the universe). Thus (is named) the fourfold face.

10. From those (faces) four (families of) architects were first born.

11-12. From the eastern face was born Viśva-karmā, from the southern face Maya, from the northern face Tvashṭar, while (the one born) from the western face is known as Manu.

13-16. Viśva-karmā married the daughter of Indra, and then in order Maya married the daughter of Surendra, afterwards Tvashṭar married the daughter of Vaiśravaṇa, while, the fourth (one), Manu, married the daughter of Nala.

17. The son of him bearing the name of Viśva-karman is called *sthapati* (master-builder).

18. Maya's son is known as *sūtra-grāhin* (draftsman).

19. The son of the sage Tvashṭar is called *vardhaki* (designer).

20. Manu's son is *takshaka* (carpenter). These are four (architects), (namely), the *sthapati* and the others.

21. Among these four the *sthapati* is known as the *guru* (guide) of the other three.

22. The *sūtra-grāhin* is now-a-days said to be the *guru* (guide) of the (next) two among the four.

23. The *guru* (guide) of the *takshaka* is known by the name of *vardhaki*.

24-25. The *sthapati* knows all the *śāstras* (branches of knowledge). The *sūtra-grāhin* holds the *sūtra* (measuring-string). The *vardhaki* is well-versed in the work of measurement. The *takshaka* is so called because of his carpentering.

26-27. The *sthapati* is capable of directing, knows the Vedas, (and) is deeply learned in the *śāstra* (science of architecture). The *sthapati* is so called because he is the director-general (of architecture, i.e., the master-builder).

28-29. Under the directions of the *sthapati* the *sūtra-grāhin* and all the others always carefully carry out the building-work in accordance with the rules of the science (of architecture).

30. The four classes, consisting of the *sthapati* and the others, are distinguished by the architects.

31. The *sthapati* is known to be endowed with the qualifications of an *āchārya* (director).

32. The *sūtra-grāhin* (also) knows the Vedic literature, is well-versed in the *śāstras* (branches of knowledge), and is an expert in (architectural) drawing.

33. The *vardhaki* also knows the Vedic literature, capable of (correctly) judging (architectural matters), and is an expert in the work of painting.

34-35. The *takshaka* knows well (his) work (carpentry), is sociable, helpful (to his colleagues), faithful to his friends, and kind in nature. The Vedic literature should also be studied (by him). (Thus) all (his) qualifications are described.

36-38. In this (building-work) nowhere in the world success can be achieved without the help of the architect and the guide; therefore, with the help of these (architects) (the building-work) should be carried out, because without following this instruction no one can successfully attain fruition and the final object (i.e., completion).

39. The qualifications of the architects have been (thus) described; the system of measurement will (now) be elaborated.

40-41. What is perceptible to the eye of the sages is called a *paramāṇu* (atom), and eight times this is known as a *ratha-dhūli* (lit. car-dust, molecule).

42. Eight of the molecules combined are what is known as a *vālāgra* (hair-end).

43. Eight hair-ends joined together make what is called a *likshā* (nit).

44. Eight nits combined together are called a *yūka* (louse).

45. Eight lice together are called a *yava* (barley-corn).

46. Eight barley-corns combined together make what is called an *aṅgula* (finger-breadth).

47-48. Each of these (modes of measurement) is said to be of three kinds, especially with regard to (the increment of) *yava*-measurement. With six, seven, and eight barley-corns are (distinguished

respectively) the smallest, the intermediate, and the largest *yava* measurements.

49. Twelve *aṅgulas* together are called one *vitasti* (span).

50. Two *vitasti* make a *kishku* (small cubit) and an *aṅgula* added to them, it is a *prājāpatya* (cubit).

51. A cubit of twenty-six *aṅgulas* is known as *dhanur-mushṭi*.

52. A cubit of twenty-seven *aṅgulas* is called a *dhanur-graha*.

53. Four *dhanur-mushṭi* cubits make a *daṇḍa* and eight *daṇḍas* make one *rajju*.

54. The *kishku* cubit is used in measuring conveyances and couches.

55. The *prājāpatya* cubit is used in measuring all kinds of mansions.

56. And the edifices are measured in what is (called) the *dhanur-mushṭi* cubit.

57. Measurement of villages and such other objects should be carried out in the *dhanur-graha* cubit.

58. But the measurement in *kishku* cubit may otherwise be used in measuring all the objects.

59-60. *Samī* (Acacia suma), *śāka* (Ocinum sanctum), *chāpa* (? bow-tree), *khadira* (Acacia catechu), *tamālaka* (Xanthochymus pictorius), *kshīriṇī* (milk-tree) and *tindinī* (tamarind tree) are known as the kinds of wood for the yard-stick.

61-63. After selecting the wood (for the yard-stick) it should be dipped into water for three months. After having been washed it should be taken out (of water) and be split by the carpenter. The sapped part of that hewn timber should be shaped into a (solid) four-sided (piece).

64-65. It should be one cubit long, one *aṅgula* (three-fourths inch) broad, and its thickness is stated to be a half *aṅgula*. The yard-stick (lit. cubit-measure) should be accurately marked.

66-67. Either *kramuka* (betel nut tree) or *veṇu* (bamboo) is stated to be (fit as) the timber for the (measuring) rod (which should be) neither bent, nor broken, nor porous but smooth.

68. Vishṇu is stated to be the tutelary god of (the wood for) both the yard-stick and the (measuring) rod.

69-71. The rope-marker should make the rope (*rajju*) with the split husk of cocoanut, with the *kuśa*-grass (poa cynosuroides), the bark of the banyan tree, silk cotton, and *kiṁśuka* (butea frondosa) thread, bark of the palm tree, and *ketaka* (pandanus odoratissimus), or with any other suitable bark.

72. Measuring sidewise, the width of the measuring rope should be one *aṅgula*.

73-74. The rope should be made free from knots and three-fold for (measuring the architectural objects of) the Gods, Brahmins (earthly-gods) and Kings (Kshatriyas), two-fold for (those of) the Vaiśyas, and of single-fold for (those of) the Śūdras.

75. Vāsukī (serpent-god) is the presiding deity of the (measuring) rope, and Brahmā is known as the presiding deity of measurement.

76-77. Thus ascertaining the yard-stick (cubit), the rope and similarly, the measuring rod, and remembering those presiding deities the *vardhaki* should carry out the measurement (of an object).

78. Thus measured the architectural objects are attended with success.

79. One who does what is not prescribed becomes recipient of scanty result.

80. The architect should, therefore, avoid (the unprescribed things) but he should thoroughly do that (which has been prescribed)

Thus in the *Mānasāra*, the science of architecture, the second chapter, entitled:

The description of the details of measurement.

CHAPTER III

THE CLASSIFICATION OF ARCHITECTURE

1-2. The various abodes where gods and men dwell have been noticed by the divine sages; those objects will also be elaborated now (in this science of architecture).

3. The ground, the edifice and other buildings, the conveyance, and the bedstead and other couches are the four classes (of architectural objects).

4. Of these classes the ground is the chief object for all purposes.

5-6. The mansion and other buildings are truly called dwellings because of their connection with the (chief) object (the ground). Indeed these buildings are stated to be the (main architectural) object by those who specialise in the knowledge of architecture.

7-8. The palace, the pavilion, the council-chamber, the hall, similarly the water-shed, and also the theatre: all these are stated by the ancients to be (understood by the term) edifice (*harmya*).

9-10. The fast conveyance, the car, the palanquin, and similarly, the chariot: all these, Oh architect, are known as the kinds of conveyance. The bedstead will similarly be described (now).

11-12. The cage, the swing, the sofa, the eight-legged crow-(shaped) bed, the plank-bed, similarly the small bed: all these are stated to be (implied by the term) couch (*paryaṅka*).

13. These are said to be the four main topics, namely, the ground and the others.

14. The earth becomes the abode of all beings because of the sun.

15-16. The contour, the colour, the odour, the features, the sound, the taste, and the touch: by examining these in order the site (for a building) is ascertained for measurement.

17. The site, selected after all these tests, is (further tested) differently for the different castes (lit. the twice-born).

18-20. That site is auspicious for the Brahmins, which is square (in shape), whitish in colour, possessing the fig tree, sloping towards the north, and sweet and fragrant in taste.

21-23. With (the length) exceeding the breadth by one-eighth, reddish in colour, with declivity towards the east, bitter in taste, possessing the peepal tree (ficus religiosa), and wide in size: such a site is suitable and prosperous to the Kshatriyas (lit. the kings).

24-26. With the length exceeding the breadth by not more than one-sixth, yellowish in colour, possessing the fig tree (ficus infectoria), with declivity towards the east, and sour in taste: such a site is auspicious and the source of all success to the Vaiśyas (lit. the merchant class).

27-29. With the length exceeding the breadth of four parts by one part (i. e. one-fourth), possessing the banyan tree, black in colour, pungent in taste, and with declivity towards the east: such a site bears prosperity to the Śūdras.

30. Of the sites described above the (first) two are stated to be the best and the (last) two fair.

31. The ground (which is) the chief of the (four classes of architectural) objects is thus described; all the four classes are (treated in) the same (manner).

32. The classification of architectural objects is thus described. They are (further) distinguished (separately) for (the different castes, namely,) the twice-born and the other.

33-34. All (kinds of sites) are suitable to the Brahmins, especially to the Gods, and for the Kshatriyas similarly; for the Vaiśyas and the Śūdras (the sites) should be as stated above in order.

Thus in the *Mānasāra*, the science of architecture, the third chapter, entitled:

The classification of architecture.

CHAPTER IV

THE SELECTION OF SITE

1. I shall now describe the selection of site briefly in this science (of architecture).

2-3. The quadrangular ground which is elevated towards the south and towards the west is suitable (for the buildings of) the gods and the men respectively.

4. (Associated) with horses, elephants, bamboos, reeds, and water-snakes.

5. Associated also with cows and reptile species.

6-7. Associated with lotus-seeds and trumpet-flower-fragran[illegible] conducive to the growth of all (other) seeds, and possessing ted by colour.

8. Attended with dense softness and being (lit. should be) of pleasant touch.

9-10. Associated with the sacred fig tree, the *nimb*-tree (azadirachta Indica), the *aśoka* (Jonesia Asoka Roxb), the *sapta-parṇaka* (Alstonia Scholaris), the mango tree, and the poison-tree (upas tree), and level.

11-12. White, red, golden, black or grey in colour, and hexagonal (in shape): such a ground brings forth all prosperity.

13-14. The (other) features: having a pond surrounding the south (and) a southern aspect, looking green to the sight and attractive

to the mind (when) tested by (holding in the hollow of) a man's palms.

15-16. Free from worms, white-ants, rats, skulls, bones, shells, sand and holes : (such a ground) brings prosperity.

17. The land (being) held up by various kinds of pikes and pillars.

18. The soil should be clayey, scratchy and crusty.

19. Without husks, ashes and gravels.

20. Such a ground brings prosperity to the people of the Brahmin and the other castes.

21-22. Bearing the smell of honey, oil and clarified butter, and that (ground) which bears the bad smell of burnt things, (and also that) bearing the smell of bird, fish and dead body : (all these kinds of land) should be avoided.

23. Associated with royal palaces, adjacent to (public) meeting-places and tombs.

24. Associated with thorny trees, and abounding in *śāla* trees a.. tica robusta

25. Uneven (lit. high) like a tortoise, circular, triangular, and resembling the club.

26. Clouded (with the smoke) from the dye-factories, surrounded by the workshops of blacksmiths.

27. At the junction of four paths, three paths, two paths, or the city-path (i.e., trade route).

28. Looking like the *mṛidaṅga* (small drum), and resembling a cavity and a bird's beak.

29. Resembling the *jhaṣa* (large) fish and everywhere possessing lightning (*prabhā*) trees.

30. Having the *śāla* trees (shorea robusta) at the four corners, and abounding in tomb-trees.

31. Infested with poisonous (lit. great) snakes, and being a garden of *śāla* trees (vatica robusta).

32. Frequented by boars and monkeys, and being the abode of jackals (or demigods of roaring wind, *rudra*).

33-35. (The ground) containing the abodes of owls, lions[1] and snakes, species of fish, kinds of birds, cats, and of bird-like (beings), and also the abodes of buffalo-like (large animals) and goat-like small animals.

36. (The grounds) of these (descriptions) should be avoided: this is the injunction of the professors of the science of architecture.

37. The ground accessible from many directions (lit. doors) and holed by worms should (also) be avoided.

38-39. Such being the case (i.e., instruction) concerning this first object of building, he who commits any blunder out of ignorance will be the sea (source) of (all) evils; therefore, the first (lit. root) object, the ground, should receive more consideration (than the other objects).

40-42. Should the ground with other features be of various colours, of various tastes, productive of seeds (i.e., fertile), redolent like musk by black-bees, it, containing (as it does) all the (good) features, should be purified (i.e., selected, for the purpose of erecting buildings on it) by all the leading architects.

Thus in the *Mānasāra*, the science of architecture, the fourth chapter, entitled:

The selection of site.

[1] This is a translation of पञ्चानन which seems to have been implied by पञ्चाकृति.

CHAPTER V

THE EXAMINATION OF SOIL

1. The rules for examination of soil also are now briefly described in this science (of architecture).

2–4. Having thus selected the ground which possesses the contour, colour, sound, etc., as defined before and having made the architectural offerings as usual, the expert architect should then cause benediction (lit. successful day) to be pronounced together with the auspicious sounds of musical instruments (horn).

4–9. 'Let all creatures, demons and gods as well, leave this place; let them go elsewhere and make their abode there': this *Mantra* (incantation) should be repeatedly uttered in a low voice. After selecting a pot it should be (properly) placed and covered (with soil) wherein should be sown all seeds manured with cow-dung and be watched the growth of dense sprouts from the unrestrained seeds.

10. Cows, oxen and calves should be brought in there.

11–14. Consequently (the ground) stamped with the foot-tracks and the breathing of cattle, resounded with the lowing of the oxen, and rendered whitish by the collective spreading of barley-corn (grown thereon), besmeared with cow-dung falling in lumps like the coming out of calves from kine, and then inhabited by cowherds.

15. Adorned with the horripilations caused by the foam of chewing the cud and also with the foot-steps of cows.

16. Furnished with transparent water and fragrant with the smell of cows.

17. On some auspicious day (made so) by the constellation of stars also.

18-19. In an auspicious moment, *karaṇa* (eleven divisions of the day) and *lagna* (conjunction), while the highly learned Brahmins keep pronouncing all auspicious benediction (lit. good day).

20-22. In the (selected) spot the earth should be dug extending to the building site. It (the tank thus dug out) should be made quadrangular (in shape) and one cubit deep, and filled with water to the same level on four sides.

23-25. According to the scriptural injunction (*śāstra*), the beautiful Ambikā (goddess) should be worshipped and adored with all jewels, water, perfumes, flowers, as well as unhusked rice. Then in the morning the wise (builder) should offer her an oblation of milk, rice and sugar.

26-27. (Sitting on) *kuśa* grass spread on the ground near the tank, the faithful and self-possessed (builder) with concentrated mind and his head towards the east (should pray as follows).

28-29. 'May the great earth prosper in corn and riches. I bow to Thee, the fount of blessings and (prithee) keep thyself dry and good.'

30. After having repeated this prayer (lit. incantation), the (ceremony of) fasting should be observed.

31. In the morning, the wise builder together with the architects should examine the condition (of water in the tank).

32-33. If it is seen that there is left some water, it (the soil) should be taken to be for good ; if (on the other hand) it be (entirely) dried up, it means the loss of wealth and sustenance ; and if it be wet, it means destruction.

34-35. If it (the cavity) be filled up with earth (dug out before) from all sides, the soil is fair ; if it be not filled up with the (same) earth, the soil is bad ; and if it be overfilled, the soil is good.

36. After seeing (the results of these tests) it will be good for the master to walk round the site (in order to ascertain that all parts are equally good).

37. The ground (which) like the all-productive cow (is good in every way) should be selected (as a building-site) in order to secure (all) prosperity (out of it).

38. The characteristic marks of oxen for ploughing (the selected site) are now described.

39-40. Whitish and brown as well as red and yellow, each of these oxen is auspicious.

41. The one of variegated colour and the one with a mark of the stick should be avoided.

42. Those with horns bent downwards, with superfluous horn, or with horns crossing each other should also be avoided.

43. Those who are too young or too old should also be avoided: this is the view (of the experts) on the matter of yoking (oxen in ploughing the selected site).

44. The ox who bears a spot caused by biting and who is of defective sight should be avoided.

45. Those who have short tail, disc-like hoof and are devoid of strength should (also) be avoided.

46. Those who have torn ears and fallen teeth and are lame in legs should be avoided.

47-50. The one who is naturally white in colour and is stamped with a spot at the forepart of the four feet, at the root of the horns and at the centre of the forehead, and who possesses eyes resembling flowers, red, well-socketed and extended: a learned man should not miss such an ox, but should make this a rule for characteristic marks.

51-52. Gold rings should be filleted round the foreparts of the horns and hoofs (of selected oxen). The forehead-plate as well as the ears should also be ornamented with gold.

53-55. On the day previous to ploughing the wise builder should make, as stated (by the ancients), an experimental yoking of the oxen to the plough for the first preliminary ploughing. I shall (now) describe the details of the plough.

56-57. Babūl tree, Acacia catechu, *nimb* (Azadirachta Indica), pines (Pinus Longifolia), and plants containing milky sap and blood: these are the desirable trees to make the plough with.

58–59. The length of the plough should be one, one-and-one-fourth, or one-and-one-half cubits ; and the width at the bottom should be three, four or five *mātras* (i.e., *aṅgulas* of three-fourths inch each).

60. At the middle of its length the plough should be somewhat bent, and have an (ear-like) edge.

61. Its bottom should be octagonal, half being three-stripped like a bamboo-leaf.

62. At the upper part of its bottom the top-end of a bamboo-rod should be pushed in.

63. The length of the rod should be three cubits and the breadth proportional, so that it may be strong.

64. The length of the plough-tail should be one-and-one-half cubits, and the width at the bottom five *aṅgulas* (of three-fourths inch each).

65. As an alternative the length of the tail may be one-and-one-fourth cubits, or one cubit.

66. The top of the tail ending by the plough-root should be two *aṅgulas* (of three-fourths inch each).

67. From one to one-half *aṅgulas* should fittingly be the thickness of the tail.

68. The root of the tail should in particular be furnished with a lotus leaf (-like device).

69–70. The length of the ploughshare at the forepart of the tail should be three, four, five or six *aṅgulas* (of three-fourths inch each) ; and its height should be two or three *aṅgulas*, and it should be furnished with all devices.

71. At the hole (therein) the carpenter should drive in an iron nail.

72. The length of the yoke should be made two cubits and a half.

73. The width at the middle of the ploughshare should be three, four or five *aṅgulas* (of three-fourths inch each).

74. The width of its two ends should be two or three *aṅgulas* each.

75. This should be the measurement of the yoke which diminishes gradually from the middle towards the forepart and the hindpart,

76. There should be two holes for yoking oxen, one on each half of the yoke.

77. Half way between those two holes the plough(-rod) should be fitted in.

78. In an auspicious moment and zodiacal conjunction the ploughing should be commenced.

79. (Both) the oxen and the architect should be tastefully ornamented with perfumes and flowers.

80-82. Being furnished with ornaments on the five limbs and putting on a piece of white cloth and upper garment the wise architect should meditate on the two oxen as the sun and the moon, on the plough as the Boar god (Vishṇu), and on the builder as Brahmā.

83. The Brahmins should pronounce the benediction to the best of their power.

84. Then the architect should plough amidst all auspicious sounds.

85. He (the chief architect) should plough (only) three rounds and all the ploughing (of the selected site) should be done by the Śūdras (i.e., tillers).

86-87. During ploughing the tiller too should be pure and attentive, and inform the architects when the ploughing is completely finished.

88. The ground is known as the foundation of all kinds of building.

89. The wise builder should, therefore, make the selection of the site (and the preparation of soil) as enjoined above.

90. Anything beginning from the selection (of the site) up to the end (of the preparation of the soil), done through ignorance, would lead to the destruction of all prospects.

91. Consequently this object of building (i.e., the ground) should be done in accordance with all these characteristics.

Thus in the *Mānasāra*, the science of architecture, the fifth chapter, entitled :

The examination of soil.

CHAPTER VI

ERECTION OF GNOMONS AND PEGS

1. After this I shall fully describe the rules for erecting a gnomon[1].

2. At sun-rise the erection of the gnomon should be undertaken.

3-6. In a month of the northern (December 22 to June 21) or the southern (June 22 to December 21) solstice, in the bright or dark fortnight, on the most auspicious day, excepting the full moon (day) and the new moon (day), and at a very auspicious moment, in the morning the gnomon should be erected. Thereafter it should remain there till the evening.

7-9. On the day previous to the erection (of a gnomon), purification of the place (where the gnomon is to be erected) should be carried out: in the middle of the selected site a spot, quadrangular (in shape) and measuring four cubits each way, (should be made) watery all over (in order to secure the accurate levelling).

10-12. The trees (from the timber) of which the gnomon is stated to be made are these: *kṛitamāla* (cassia fistula), the branch of *śamī* (a kind of fire-producing) tree, sandal (sirium myrtifolium), red sandal (caesalpina sappan), *khadira* (acacia catechu), *tinduka* (diosphyros embryopteris), white milk-tree (mimusops kanki), or *śubhadanta* (tooth-tree).

13-14. The length of the gnomon should be one cubit (i.e., eighteen inches) and the width at the bottom six *aṅgulas* (of three-fourths

[1] For dialling, finding out cardinal points, and orientation and planning of buildings.

inch each); the width at the top-end should be two *aṅgulas*, (the whole) gradually tapering from the bottom to the top.

15. Its top should be quite circular, smooth and shaped like an umbrella.

16. This is the large type of gnomon, the intermediate one is now described.

17-18. Its length should be eighteen *aṅgulas* and the width at the bottom five *aṅgulas* and the width at the top-end one *aṅgula*, and the rest should be made as aforesaid.

19-21. The length of the smallest gnomon especially should be twelve *aṅgulas*, the width at the bottom four *aṅgulas* and at the top-end one-third *aṅgula*; as an alternative the length may be nine *aṅgulas* and its width at the bottom and at the top-end (should correspond), and the rest is stated to be as before.

22-24. In the centre of the selected site the expert geometrician[1] should describe a circle by moving around (a cord of) twice the length of the gnomon (as the radius); and on the centre (of the circle) a gnomon should be fixed.

25-28. In the forenoon (at a certain time) the chief architect should mark a point (where) the shadow from the gnomon (meets) the circumference in the west. In the afternoon (also) a point should be marked as before (i.e., as in the morning)[2] where the shadow from the gnomon (meets) the circumference in the east. Thereafter the gnomon should be left (to remain) therein.

29-30. The length of the gnomon being divided into ninety-six parts, (and) the *apachchhāyā*[3] being left out of these parts, the (due) east should then be determined.

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[1] Literally one who is conversant with the point (*bindu*).

[2] The morning shadow and the evening shadow meet the circumference of the circle approximately at an equal interval from the noon.

[3] The term is interpreted ordinarily as 'light or dim shadow' which in astronomical language may be rendered by 'penumbra,' i.e., a partial or lighter shadow formed *all round* the perfect or darker shadow. But the 'penumbra' formed round the 'umbra' of the gnomon can never be measured in *aṅgula*

31-35. In the months of *Kanyā* (August and September) and *Vṛisha* (April and May) there is no *apa-chchhāyā*. The *apa-chchhāyā* left out is two *aṅgulas*[1] in the four months, *Mesha* (March and April), *Mithuna* (May and June), *Tulā* (September and October) and *Siṁha* (July and August); four *aṅgulas* in (the months of) *Vṛiśchika* (October

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(of three-fourths inch) as given in the lines immediately following (31—35, 50—76) with any scientific precision, because no accurate line could be drawn between umbra and penumbra to show their demarcation and consequently it cannot be subtracted from the shadow, either from beyond the length or side of its extreme point meeting the circumference of the circle.

Another possible meaning of the term would be the shadow which is deviated, declined, dislocated, displaced or wrongly placed. Though not distinctly mentioned in ordinary dictionaries or the literature accessible to the lexicographers this sense of the term is grammatically possible, and there are parallel terms like *apa-devatā*, *apa-mṛityu*, *apa-karman*, etc., where the particle *apa* conveys similar connotations. Further, declination of the shadow is an astronomical fact in consequence of the processional declination of the sun. Taken in this sense the declined shadow will have to be deducted either by the circumference of the circle (as shown in plate VI, fig. 2) or from the top end of the length of the shadow (as in plate VI, fig. 3) But in both cases the following are the grave objections :—

(i) The amount of corrections as given (in lines 31—78) are too large, the maximum correction possible, on account of the change of declination of the sun in the interval between the morning observation and the afternoon one, being less than $\frac{1}{360}$th part of the length of the gnomon, i.e., less than $\frac{1}{4}$th *aṅgula* approximately, while it is stated to be 8 *aṅgulas* (in lines 35, 69, 70).

(ii) The maximum corrections between the times when the correction is zero should be the same, but they are not so as given in the text.

(iii) The times when the correction is zero should be solstices (June 21-22, December 21-22), but it is not so as given in the text lines 31, 51, 52).

[1] *Aṅgula* in these lines and *Mātra* in lines 56, 66 and elsewhere are indiscriminately used for *Aṁśa* (part) or degrees. For different senses in which *aṅgula* is used see the writer's '*Indian Architecture*' (pages 35, 77, 121, 122) and his *Dictionary of Hindu Architecture*' under *aṅgula*.

and November), *Āshāḍha* (or Karka, i.e., June and July) and *Mīna* (February and March); and six *aṅgulas* in (the months of) *Dhanus* (November and December) and *Kumbha* (January and February); and the *apa-chchhāyā* is stated to be specially eight *aṅgulas* in (the month of) *Makara* (December and January).

36-37. The aforesaid *aṅgulas* should be marked in the shadow to the left and right of the centre[1]; (with) what is left after the deduction of these *aṅgulas* the due east line should be drawn.

38-39. During the six months (i.e., northern solstice) beginning with *Makara* (December 21-22) the shadow declines towards the south and during the six months (i.e., southern solstice) beginning with *Kulīra* (June 21-22) the shadow declines towards the north.

40-47. In the shadow facing the east-left the left (point) should be marked; thereafter moving towards the east and right the west-left points should be marked.[2] The architect should leave out the *apa-chchhāyā* and draw the east-west line. By taking (the cord) through the north direction towards the east region (thus) the extension of the fish should be made and the *aṅgula*[3] (should be marked) in front. The door (i.e., entrance) of it (fish) should be marked to the south and north of that line; the line drawn joining the head and tail of the fish should be the north-south line[4]. The point should

[1] *Bindu*, which means a 'point', it may also imply the centre of a circle or a point of intersection of any two lines.

[2] Apparently what is intended to be implied (in lines 40-41) is this: in the shadow moving to the east by the left the left point should be marked, thereafter moving towards the west, opposite the right, i.e., left, the right point should be marked.

[3] Obviously it seems to imply a 'point', but it may indicate the measure of *apa-chchhāyā*.

[4] The ordinary mode of finding out cardinal points by means of a gnomon is simple. A gnomon of 24, 18 or 12 *aṅgulas* in length, 6, 5 or 4 *aṅgulas* at the base and 2, 1 or ½ *aṅgula* at the top which is shaped like an umbrella, is fixed on the selected ground levelled with water. A circle is described from the bottom of the gnomon with radius twice the length of the gnomon. Two points

be marked by moving the cord up to the circular orb (i.e., circumference).

48-49. The *apa-chchhāyā* is (further) specified as it varies during the three parts, of each month, of ten days each.

50-51. In the month of *Mesha* (March and April) two *aṅgulas* (of *apa-chchhāyā*) should be left out during the first ten days, one

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are marked on the circumference of the circle when the shadow of the gnomon meets it before and after noon. The straight line joining these two points is *roughly* taken to be the east-west line (vide lines 30, 37, 42, 84). The line which bisects the east-west line would be the north-south line. The bisecting is done in the usual way. With each end of the east-west line as centre and the length of the line as radius two circles are drawn which intersect each other at two points forming a fish-like common segment; the straight line joining these points of intersection bisects the east-west line at right angles and indicates the north-south line. The intermediate quarters are found out in the same way by constructing the fish between the points of the determined quarters (see plate VI, fig. I).

The inaccuracy in the precise determination of the east and west points is caused by the variation of the shadow in consequence of declination of the sun during the interval between the two instants in the forenoon and afternoon when the shadow is observed. For the purpose of rectifying the inevitable variation of the shadow *apa-chchhāyā* is stated to be deducted from the shadow (see note under line 29-30).

The subject has been discussed more or less elaborately by all the other leading authorities of astronomy and architecture, for instance,

(1) Sūrya-siddhānta of Bhāskarāchārya (III, 1—51).
(2) Brahma-sphuṭa-siddhānta of Brahmagupta (XIX, 1—20).
(3) Līlāvati of Bhāskarāchārya (XI, 1—10; part II, chapter II, section 4)
(4) Siddhānta-śiromani of Bhāskarāchārya (VII, 36—29).
(5) Pañcha-siddhāntikā of Varāhamihira (II, 10—13, XIV, 1—11, 14—22).
(6) Mayamata (VI, 1—28).
(7) Śilparatna of Śrikumāra (XI, 1—22).
(8) Kāśyapa-śilpa (I, 60—70).
(9) Vāstu-vidyā (III, 7—10).
(10) Manushyālaya-chandrikā (II, 1—4).
(11) Vitruvius (Book I, chapter VI, Book IX. chapters IV, VIII, IX)

aṅgula (part) during the middle ten days and none during the last ten days.

52-53. In the month of *Vṛisha* (April and May) none at all should be left out during the first ten days, one *aṅgula* (part) is stated (to be left out) during the middle ten days, and two parts during the last ten days.

54-55. In the month of *Mithuna* (May and June) two *aṅgulas* (parts) should be left out during the first ten days, three *aṅgulas* (parts) during the middle ten days, and four *aṅgulas* (parts) during the last ten days.

56-58. In the month of *Kulīra* (June and July) four *aṅgulas* (parts) should be left out during the first ten days; during the middle ten days also three *aṅgulas* (parts) should be left out as that (i.e., the light-shadow); and two *aṅgulas* (parts) are stated (to be left out) during the last ten days.

59-60. In the month of *Siṁha* (July and August) two *aṅgulas* (parts) should be left out during the first ten days, one (part) during the middle ten days, and none during the last ten days.

61-62. In the month of *Yuvatī* (August and September) none should be left out during the first ten days, one *aṅgula* (part) should be left out during the middle (ten days), and two *aṅgulas* (parts) during the last ten days.

63-64. In the month of *Tulā* (September and October) two *aṅgulas* (parts) are forbidden (i.e., left out) during the first ten days and three *aṅgulas* (part) should (also) be left out during the middle (ten days), and four (parts) are known (as forbidden) during the last (ten days).

65-66. In (the month of) *Vṛiśchika* (October and November) four *aṅgulas* (parts) (should be left out) during first (ten days), five (parts) during the middle ten days, and six *aṅgulas* (parts) during the last ten days.

67-69. In the zodiac (i.e., month) of *Dhanus* (November and December) six *aṅgulas* (parts) should be left out during the first ten days and seven *aṅgulas* (parts) during the middle ten days, and it is

(well) known that eight *aṅgulas* (parts) should be left out during the last ten days.

70-71. In (the month of) *Makara* (December and January) the wise (architect) should leave out eight *aṅgulas* (parts) during the first ten days, seven *aṅgulas* (parts) should be left out during the middle (ten days), and six *aṅgulas* (parts) should be left out during the last (ten days).

72-73. In (the month of) *Kumbha* (January and February) he (the architect) should leave out six *aṅgulas* (parts) during the first ten days, five *aṅgulas* (parts) should be left out during the middle (ten days), and four *aṅgulas* (parts) during the last (ten days).

74-76. In the zodiac (i.e., month) of *Mīna* (February and March) four *aṅgulas* (parts) should be left out during the (first) ten days, and three *aṅgulas* (parts) during the middle ten days, and during the last ten days also two *aṅgulas* (parts) should be left out.

77-82. The occasions as has been stated (by the ancients) when there is no *apa-chchhāyā* will now be further specified here : in the aforesaid solar zodiac in *Kanyā* (August and September) and *Vṛishabha* (April and May) during the other (i.e., last) twenty days should there happen to be a constellation[1] the aforesaid (measures in) *aṅgulas* (of *apa-chchhāyā*) should be taken as nil. Knowing this he (the architect) should use the cord (to find out the cardinal points). In these solar months even if those constellations take place (only) occasionally it (*apa-chchhāyā*) should be left out, (because) the sages have allowed discretion to accept or reject in case of doubt (to the extent of) ten (? two) *aṅgulas*[2]

[1] Which is assigned to the sixth (Kanyā) and second (Vṛisha) zodiacs.

[2] The rendering of last two lines (81-82) is tentative as it contains a grave objection, namely, when the maximum correction can be only eight it would be useless to allow to exercise discretion to the extent of ten, although instances of such an incongruity are not rare in the *Mānasāra* and other texts. It should be noticed that the lines 81—83 though preserved by all the other Mss. have been altogether left out by the *Codex archetypus* : they need not be taken into consideration at all.

82-84. In accordance with these (rules)[1] the (different) quarters (i.e., the points of the compass) should be determined (and) the cord should be spread therein[2], the due east being (first) determined most perfectly (i.e., accurately)[3].

84-86. Then the north-east is stated (to be found out): the *aṅgula* (? point) is marked to the north of the point of the east *aṅgula* (already) marked and the north-east line is drawn from the point (extending) up to the west[4].

87. The due east should be preferred for the building of those who desire salvation (i.e., temples should face due east).

88. The north-east is preferred for (the building of) those who seek enjoyment (i.e., residential buildings should face north-east).

89-90. That (building) which faces south-east is the source of all evils: therefore, all (kinds of) buildings with face towards the south-east should be avoided.

91. This (instruction) being observed a building is capable of bringing forth an intensive and extensive prosperity.

92. The measurement of the length of the (measuring) cord should conform to the length of the (measuring) rod[5].

93-94. Dividing the threads (of the cord) in three folds the Sūtragrāhin (i.e., measurer or designer) should join them (in the following manner): at first the cord should be of two folds and the third fold (should be joined by taking it round the two-folded cord) by the right side.

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[1] Which include the aforesaid modification, exception and exercise of discretion.

[2] That is, by means of a cord with which the necessary circles and the required lines are drawn.

[3] Because, otherwise, the determination of the other quarters would not be precise, as their accuracy depends upon the perfection of the east-west line. For the full details see note under lines 40 - 47.

[4] For details see note under 40—47.

[5] Eight rods make one cord, see chapter II, 53,

95. It (the cord) should be made either of cotton or of jute threads.

96. The (more) accurate dimension in a building can indeed be secured (when it is measured) by the cord (rather than by the rod, in the following manner).

97-100. He (the architect) should move the measuring cord (in order to find out the dimensions of an architectural object) taking it (first) from south-west as middle towards its (connecting) directions (i.e., south and west), (then) from east to south-east, from east to north-east, from south to south-east, from west to north-west, from north to north-west, and from north to north-east.

101-102. With (this) measuring cord should be measured the architectural objects, such as extensive temples, large residential buildings[1] (for kings and richer people) and (humbler) pavilions (i.e, small buildings[1], both religious and residential), and all kinds of villages, etc. (i.e., inclusive of towns and fortified cities).

103-104. From beyond the extreme end of these points found out by the measuring cord at a distance of a cubit or two around the dimensions (of an architectural object) thus ascertained (wooden) pegs are, as stated (below), fixed [2].

105-108. Two pegs each at the corners (lit. ears) of the central line should be fixed. For the exit of the foundation four pegs should be

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[1] *Trigṛiha* seems to imply residential houses with three courts and court-yards, while *Vimāna* would mean huge temples with five courts and *Maṇḍapa* would refer to humbler buildings, both religious and residential, with a single court-yard (see the writer's *Indian Architecture*, pages 51-52, 47, 48, 53-54, and also his *Dictionary of Hindu Architecture* under these terms). In the *Mṛich-chhakaṭika* (act IV) a palace possessing eight court-yards is described in detail, but *tridhātu-śaraṇam* is mentioned as a three-storeyed building in the *Rigveda* (see *Indian Architecture*, pages 32, 6).

[2] In order to fasten strings for laying the foundation.

fixed at the four quarters (i.e., north, east, south and west). Four pegs at the four corners (ears) should be fixed and the corners should be attached (i.e., joined) [1]. This is of great benefit, it should be done.

108-110. The wood with which these pegs are made will be described (now); the trees with (the timber of) which the pegs to be (thus) fixed are made are these: *khadira* (acacia catechu), *ādimeda* (a plant), *madhūka* (bassia latifolia), and similarly milk-tree (mimusops kanki) and others, or the pithy trees.

111-112. The length of these pegs to be fixed should be twenty-one or twenty-five *aṅgulas* (of three-fourths inch each) and its width should be (equal to) the measure of one's fist (i.e., about seven inches).

113. Its bottom should be made (pointed) like a needle, but (from above the ground) it should taper gradually from bottom to top.

114-116. The architect and the master standing with face towards the east or north, (each) catching hold of a peg by the left hand and holding a hammer should strike it (the peg) with the right hand, and there should be eight strokes on each (of the pegs).

117-118. At the time of the fixing of the pegs, the Brahmin (priest) should pronounce benediction, and thereafter those who assemble (at the laying function of the foundation) should (also) pray (for the success of the undertaking) with all auspicious sounds.

119-120. After this (ceremonial posting of pegs) the carpenter with the permission of the (chief) architect should in the same way strike all the pegs beginning with south-west corner amidst all auspicious sounds.

Thus in the *Mānasāra*, the science of architecture, the sixth chapter, entitled:

The rules for erecting gnomons and pegs.

[1] See plate VI, fig. 4.

CHAPTER VII

THE GROUND PLANS

1. Now will be described the ground plans (lit. marking of plots on the ground) in order.

2. The first is a site of one plot[1] and is named *Sakala*.

3. The second is a site of four plots and is named *Paiśācha* (or *Pechaka*).[2]

4. The third is a site of nine plots and is known by the name of *Pīṭha*.

5. The fourth is a site of sixteen plots and is known as *Mahāpīṭha*.

6. The fifth is a site of twenty-five plots and is known as *Upapīṭha*.

7. The sixth is a site of thirty-six plots and is called *Ugrapīṭha*.

8. The seventh is a site of forty-nine plots and is called *Sthaṇḍila*.

9. The eighth is a site of sixty-four plots and is called *Chaṇḍita*.

10. The ninth is a site of eighty-one plots and is called *Parama-śāyika*.

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[1] These plots may be square, rectangular, round, oval or sixteen-sided as stated in the *Purāṇas*; in the *Mānasāra* also quadrangular, hexagonal, octagonal and round shapes of architectural and sculptural objects are admitted in reference to the styles, although the buildings are stated to bear masculine, feminine and neuter aspects which are also referred to in the *Āgamas* (see the writer's *Indian Architecture*, pages 113 - 118, 176, 24, 49, 111, 118, and his *Dictionary of Hindu Architecture* under Prāsāda and Nāgara). A triangular plan seems to be referred to in line 23 (see note thereunder).

[2] It is called Pechaka in the Mayamata (VII, 1, 23) which appears to be a summary of the *Mānasāra*.

11 The tenth is a site of one hundred plots and is known by the name of *Asana*.

12-13. The eleventh is likewise said to be a site of one hundred and twenty-one plots and its name is *Sthānīya*.

13-14. And then the twelfth (named) *Deśya* is likewise a site of one hundred and forty-four plots.

15-16. The thirteenth is likewise said to be a site of one hundred and sixty-nine plots and its name is known as *Ubhaya-chaṇḍita*.

17-18. The fourteenth is likewise said to be a site of one hundred and ninety-six plots and its name is *Bhadra*.

18-20. Similarly the fifteenth is a site of two hundred and twenty-five plots and its name is stated to be *Mahāsana*.

20-21. Then, similarly, the sixteenth should be a site of two hundred and fifty-six plots (and its name is) *Padma-garbha*.

22-23. Similarly the seventeenth is a site of two hundred and eighty-nine plots and its name is stated to be *Tri-yuta*[1].

23-24. Similarly the eighteenth should be a site of three hundred and twenty-four plots (and is named) *Karṇāshṭaka*.

25-26. Similarly the nineteenth is a site of three hundred and sixty nine plots (and its name is) *Gaṇita*.

26-27. Then, similarly, the twentieth is said to be a site of four hundred plots (and) it is named *Sūrya-viśālaka*.

28-29. Similarly the twenty-first should be a site of four hundred and forty-one plots and is called *Susaṁhita*.

30-31. So also the twenty-second is a site of four hundred and eighty-four plots (and its name is) *Supratikānta*.

31-32. In case of the twenty-third, the site should be of five hundred and twenty-nine plots (and) its name is *Viśālaka*.

33-34. In case of the twenty-fourth, the site should be of five hundred and seventy-six plots and is known as *Vipra-garbha*.

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[1] This would look like a triangular plan, which is not mentioned elsewhere (see notes under line 2).

35-36. In case of the twenty-fifth, the site should be of six hundred and twenty-five plots and should be known by the name of *Vivesa*.

37-38. In case of the twenty-sixth, the site should be of six hundred and seventy-six plots and is known as *Vipula-bhoga*.

39-40. In case of the twenty-seventh, the site should be of seven hundred and twenty-nine plots and is called *Vipra-kānta*.

41-42. In case of the twenty-eighth, the site should be seven hundred and eighty-four plots and is known as *Viśālāksha*.

43-44. In case of the twenty-ninth, the site should be of eight hundred and forty-one plots and is called *Vipra-bhakti*.

45-46. In case of the thirtieth, the site should be of nine hundred plots and is called *Viśveśa-sāra*.

46-48. In case of the thirty-first, the site should be of nine hundred and sixty-one plots and is called *Īśvara-kānta*.

48-50. In case of the thirty-second, the site should be of one thousand and twenty-four plots and is called *Chanra-kānta*.[1] Thus it has been laid down by the ancients.

51-53. The *Sakala* (plan) of a single plot should be bounded by four cords; of these the eastern cord is assigned to Āditya (the Sun), the southern one to Yama (God of death), the western one to Varuṇa (or Jaleśa, the God of water) and the northern one to Chandra (or Kshapāhara, the remover of darkness, i.e., the Moon).

54-56. The *Sakala* (plan) is recommended (for buildings) for the workship of gods and preceptors, for sacrifices with fire, for the seat (i.e., sitting room) and daily dinner (i.e., dining room,) of sages, and for the usual ancestral worship (e.g., *śrāddha*, etc.).

57-59. The *Pechaka* (plan) of four plots should be bounded by eight cords: in this plan Īśa (Śiva) is assigned to the north-east, Agni (fire-god) is the deity of the south-east, Pavana (wind-god) is assigned to the south-west, and Gagana (sky-god) to the north-west.

[1] Many of these thirty-two names of plans would indicate certain figures, while others seem to be mere technical names (see plates under chapter VII).

60. This[1] plan (is recommended for buildings) for domestic (? public) worship and public bath.

[In the *Piṭha* plan of nine plots the four deities (stated above) are assigned to the four main quarters (i.e., Āditya to the east, Yama to the south, Varuna to the west and Soma to the north) and first Īśa or Śiva to the north-east, Agni to the south-east, Gagana to the south-west and Pavana to the north-west around Pṛithivī (i.e., the earth goddess is assigned to the central plot).]

61-68. In the *Mahāpīṭha* (i.e., fourth) plan (of sixteen plots) the four central plots are assigned to Brahmā; beyond these along the boundary lines beginning from north-east are assigned in order Āpavatsa[2], Āryaka, Sāvitra. Vivasvat, Indra, Mitraka, Rudra and

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[1] This plan obviously refers to the third plan called *Pīṭha*; some lines describing this plan as also referring to the uses for which the *Pechaka* plan is recommended are missing from the text. The details of the *Pīṭha* plan are translated within square brackets from the contents of the B. D. texts and the *Mayamata* which is a summary of the *Mānasāra* (see note under text, line 59).

[2] Each of these twenty-four deities, comprising eight in the interior block around the Brahmā plots and sixteen in the exterior block, is apparently intended to be assigned to half-a-plot (see plate, under chapter VII, figure 4).

In the *Śilpa-ratna* (chapter VI, 27—29) Brahmā is placed on the central point and is not assigned to any plot; eight deities are assigned to the four central plots, similarly eight deities are assigned to the four plots in the four corners, and remaining eight plots are assigned to the remaining eight deities. In the *Mayamata* (chapter VII, 25—27) the allocation of the deities is not specified: it is simply stated (VII, 25) that twenty-five deities are assigned to the sixteen plots. The *Samarāṅgaṇa-sūtradhāra* (chapter XII, 3—14) has obviously confused the whole plan: it appears that Brahmā is assigned to four plots; Aryaman, Vivaśvat, Mitra and Bhūdhara to half-a-plot each; eight other deities beginning with Savitra and ending with Āpavatsa are also given a half-plot each; another eight deities are given one plot each; yet another set of eight deities beginning with Parjanya and ending with Aditi are given a half-plot each: this would already make twenty-nine deities and twenty-two plots, although there can be only sixteen plots (and twenty-five deities); again the outside deities from Jayanta to Charaka are given a half-plot each.

Bhūdhara; beyond these along the surrounding lines are assigned, as before (i.e., beginning from north-east), Īśa, Jayanta, Āditya, Bhṛiśa, Kṛiśānu (i.e., Agni), Vitatha, Yama, Bhṛingarāja, Pitṛi, Sugrīva, Varuṇa, Śosha, Māruta, Mukhya, Soma and Aditi.

69-70. In the *Upapīṭhaka* i.e., fifth) plan (of twenty-five plots) the aforesaid twenty-five deities are assigned to one plot (each) in the same order beginning with north-east.[1]

71-75. Of all these aforesaid (thirty-two) plans two are described (with full details): the plan (named *Chaṇḍita*) of frog-shape and which is (called) *Parama-śāyika*; the even one (of these two plans) is called *Nishkala* and the odd one *Sakala*.[2] These two plans always (by being multiplied, supply the details of all other plans) for all kinds of building. (Therefore) the characteristic features of the deities assigned to the plots of these plans are (specially) described (below).[3]

76-79. In the (*Chaṇḍita*) plan of sixty-four plots named (here) *Maṇḍūka* (frog-shaped) thirty-(two) lines[4] are drawn by twenty-eight

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[1] That the same deities are assigned to one plot each is clearer from the following :—

तत्पार्श्वयोर्द्वयोरेकभागेनैकेन वर्धनात् ।
उपपीठं भवेद्य देवतास्ताः पदे स्थिताः ॥
Mayamata, VII, 28.)

उप(उप)पीठं भवेद् यत्र पञ्चविंशत्पदान्वितम् ।
तत्रैता देवताः पूज्याः पृथगेकपदस्थिताः ॥
(Śilparatna, VI, 30.)

[2] These epithets of the *Chaṇḍita* and the *Parama-śāyika* plans seem to be used as general terms in order to ascertain the subsequent odd and even number of plans in the way elucidated in the following note: it should be noted that the technical name of the first (odd number) plot is *Sakala* (line 2), but the next even number is called *Pechaka*, not *Nishkala*.

[3] The reasons in consideration of which the full details of the eighth and particularly the ninth plans are given seem to be that the details of the subsequent twenty-three plans may be found out by multiplying the details of these even (i.e., 8th) and odd (i.e., 9th) plots (see the concluding portion of note under line 154).

[4] As a matter of fact there would be thirty-two lines not thirty

joints (or divisions), the four corners (are) partitioned by six more lines each, (thus) connecting thirty joints and the four pegs at (each) corner are connected with twelve joints of six-lined partitions, and the central plot is connected by lines with eight joints.

80-82. (In the *Parama-śāyika* plan of eighty-one plots) there (should be) four lines at (each of the) four sides, thus making sixteen lines; there should be another twenty lines drawn from south to the extremity of north, and from east to the extremity of west, and four lines at the four corners.

83-88. Beyond these (deities, namely, Brahmā to the four central plots, and Āryaka, Vivasvat, Mitra and Bhūdhara to three plots each from the east)[1], then, (are assigned) to the four corners

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[1] These are to be gathered from lines 61—64 and 111—115, but therein the order and the number of plots assigned to each of these are different; the *Mayamata* (VII, 40, 43—44), which is a summary of the *Mānasāra*, supplies both the required order and number of plots for this frog-shaped Chaṇḍita plan:—

ब्रह्मा मध्ये स्थितः शम्भुस्तन्मुखस्थाश्चतुःसुराः ।
आर्यो विवस्वान् मित्रश्च भूधरश्चैव कीर्तिताः ॥ ४० ॥
चतुःषष्टिपदे मध्ये ब्रह्मणश्च चतुष्पदम् ॥ ४३ ॥
आर्यकादिचतुर्देवाः प्रागादित्रित्रिभागिनः ।

But the following authorities, which too appear to have been based on the *Mānasāra*, while retaining the order differ in the number of plots assigned to these deities:—

ब्रह्मा मध्यचतुष्पदप्रणिहितो दिक्ष्वार्यकाद्याः स्थिता-
स्तद्बाह्येऽथ चतस्र एकपदगे द्वे द्वे स्थिते पार्श्वयोः ॥
(Śilparatra, chapter VI, 36).

अस्मिन् पदानि चत्वारि भुनक्त्यन्तः पितामहः ।
अर्यमाद्याः सुराश्चात्र द्वे द्वे मध्यगताः पदे ॥
(Samarāṅgaṇa-sūtradhāra, chapter XI, 22),

अष्टाष्टकपदमथवा कृत्वा रेखाश्च कोणगास्तिर्यक् ।
ब्रह्मा चतुष्पदोऽस्मिन्नर्धपदा ब्रह्मकोणस्थाः ॥ ५५ ॥
अष्टौ च बहिष्कोणेष्वर्धपदास्तदुभयस्थिताः सार्धाः ।
उक्तेभ्यो ये शेषास्ते द्विपदा विंशतिस्ते हि ॥ ५६ ॥
(Bribat-saṁhitā, ed. Dvivedi, part II, chapter 52,
55—56; Tranl. Kern, J. R. A. S. 1873, p. 289

the beginning from the north-east in the circumambulating way Āpavatsa, and Āpavatsa, each to a half-plot, and are also placed Savitra and Sāvitra each to a half-plot assigned to those deities (i.e., to the south-east); and in the next intermediate quarter (i.e., south-west) Indra and Indrarāja each to a half-plot, and Rudra and Rudrajaya are (each) the resident of a half-plot (in the north-west). Thus are stated (to be assigned) eight deities (in the corner plots of the third round).

88-91. Then beyond these deities he (the architect) should begin (with the corner plots of the fourth round) assigning Īśāna and Parjanya (to the north-east), Agni and Pūshan to the south-east, Pitṛi and Dauvārika to the plot in the south-west corner, and both Vāyu and Nāga are each the master of half a plot in the north-west corner.

92. (Now) he should start assigning (the following) deities) to the two sides, each, of the four corners beyond the four (corners stated above).

93-96. Jayanta (should be assigned) to the north (side-plot of the north-east corner), then Antariksha to the one plot in the east (side); Vitatha to the one plot in the east (side of the south-east corner) and Mṛiga to the one plot to the south (side); Sugrīva to the one plot in the south (side of the south-west corner) and Godhā[1] (Asura) to the one plot in the west (side); Mukhya as well to the one plot in the west (side of the north-west corner) and Udita to the one plot in the north (side).

97-99. In the eastern side Dinaka[2] (Āditya) is assigned to the two (combined) plots (of the third and fourth rounds) (immediately) to the north of the middle line (running from west to east through the whole plan), two (combined) plots to the north of this (are reserved) for

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[1] It means an alligator and as such it may imply Asura (demon) who is missing in this list, but is included in the other lists as well as in the treatises referred to in the note under lines 83—88.

[2] Obviously for Dinakara, maker of day, a synonym of the sun, named, Āditya in the other lists and the treatises quoted in the note under lines 83—88.

Mahendra, similarly two (combined) plots to the south of the same for Satya, and to the south of the latter two (combined) plots for Bhṛiśa.

100-102. In the southern side Yama is assigned to the two (combined) plots (immediately) to the east of the middle line (running from north to south through the whole plan), to the two (combined) plots to the east of this is placed Rākshasa, and similarly to the two (combined) plots to the west of the same is placed Gandharva, and the two (combined) plots to the same direction (i.e., west) of the latter are (reserved) for Mṛiśa.

103-105. In the western side Varuṇa is assigned to the two (combined) plots (immediately) to the south of the (same) middle line (as runs west to east through the whole plan) and two (combined) plots (to the south of this) are (reserved) for Pushpa-danta ; similarly to the north (of the middle line) are assigned (respectively) the Lord of Śosha and of Roga to two (combined) plots each.

106. In order the wise (architect should fill in) the four sides knowing (i.e., assigning) those two (combined) plots for each of the deities (of the northern side).[1]

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[1] That is, Soma is assigned to the two (combined) plots (immediately) to the west of the (same) middle line as runs from north to south (through the whole plan) and two combined plots to the west of this are reserved for Bhallāṭa, similarly to the east of the middle line are assigned respectively Bhṛiṅga-rāja and Aditi to two combined plots each (see the *Mānasāra*, lines 141, 151—153, 216, 221, 242, 244, the *Mayamata*, VII, 45, the *Śilparatna*, VI, 38—39, and the *Samarāṅgana-sūtradhāra*, XI, 28).

It should be noted, however, that the plots assigned to these deities by these authorities are different from those specified here. Further, it should be noted that according to the authorities referred to above Mṛiga is assigned in place of Bhṛiṅga-rāja as given here, and also Udita in place of Jayanta, Jayanta in place of Antariksa, Antariksha in place of Vitatha, Vitatha in place of Mṛiga, Mṛiśa in place of Sugrīva, Sugrīva in place of Godhā, Roga in place of Mukhya, Asura in place of Śosha, Śosha in place of Roga, and Bhṛiṅga-rāja in place of Mriśa. As regards other deities there is a correspondence. The cause of disagreement is not known: it is all the more

107-110. Charakī (demoness) is assigned to (no specified plot but to) the outside of the north-east corner (of the whole plan), (similarly) the rule (i.e., the place of assignment) for Vidārī is the outside of the south-east corner, and Pūtanā should be assigned to the outside of the south-west corner, and similarly Pāpa-rākshasī is placed to the outside of the north-west corner. Thus is described the *Chaṇḍita* plan.

110-111. Now the *Parama-śāyika* plan is described: making (therein) eighty-one plots Brahman is assigned to the nine central plots.

112-115. Similarly (i.e., outside this) six plots to the east (of Brahman) are known to belong to Aryaman[1], six plots to the south are stated to belong to Vivasvat, six plots again to the west are known to belong to Mitra and six plots to the north to Bhūdhara: (thus are assigned) the four (deities).

116-117. (Then) is described (below) the assignment of the four plots at each of all (four) corners (of the second round) between the four intermediate regions, beginning with the north-east, of the four directions.

118-119. Then Apava (i.e., Apavatsa) is likewise assigned to the two plots to the east of Bhūdhara, and similarly two plots to the north of Aryaka are reserved for Āpavatsya.

120-121. Savitra is assigned to the two plots to the east of the extreme limit of the six plots (of Mitra), and Sāvitra is assigned to the two eastern plots of Vivasvat.

122-123. In the southern side (of the second round) Indra is assigned similarly to the two plots to the west of the six plots (of Vivasvat), likewise Indrajaya is assigned to the two plots to the south of (the six plots of) Mitra.

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inexplicable why the *Mānasāra* should not follow its own order in all the three places where these forty-five deities are referred to in this chapter. The other authorities, as they are based on the *Mānasār*, seem to have improved their texts, particularly leaving out the details and obscure portions of the *Mānasāra*.

[1] Otherwise called Ārya (lines 119, 167) and Āryaka (line 62).

124-125. In the western side (of the second round) the Rudra deity is assigned to the two plots to the north of the six plots (of Mitra), similarly in the northern side Rudrajaya is assigned to the two plots to the west of the six plots (of Bhūdhara).

126. Thus are assigned deities to the inner regions and to the outer are (to be) the demons.

127. Bhānu (i.e., Āditya) should be (assigned) to the (middle) east plot and Agni to the south-east plot.

128. The wielder of the wheel (of life, i.e., Yama) should be assigned to the (middle) south plot and Pitṛi to the one plot in the south-west.

129. The water-god (i.e., Varuṇa) should be assigned to the one (middle) plot in the west and Marut to the one plot in the north-west.

130. Chandra (i.e., Soma) should be assigned to the one (middle) plot in the north, and one plot of Iśa (should be) in its own quarter (i.e., north-west).

131. And one plot to the south of Īśa is (reserved) for Parjanya.

132. The one plot to the south of Parjanya is (reserved) for Jayanta.

133. The one plot to the south of Jayanta is (reserved) for Mahendra.

134. The one plot to the south of Āditya is (reserved) for Satya.

135. The one plot to the south of Satya is (reserved) for Bhṛiśa.

136. The one plot to the north of the south-east corner is reserved for Antariksha.

137. The one plot to the west of the south-east corner should be (reserved) for Pūshan.

138. The one plot to the west of Pūshaka (i.e., Pūshan) should be (reserved) for Vitatha.

139. The one plot to the west of Vitatha is (reserved) for Grihakshata.

140. The one plot to the west of the god of religion (i.e., Yama) should be (reserved) for Gandharva.

141. The one plot to the west of Gandharva should be (reserved) for Bhṛiṅga-rāja.

142. The one plot to the west of Bhṛiṅga-rāja is recommended for Mṛiśa.

143. The one plot to the north of Gagana is (reserved) for Dauvārika.

144. The one plot to the north of Dauvārika is (reserved) for Sugrīva.

145. The one plot to the north of Sugrīva is (reserved) for Pushpadanta.

146. The one plot to the north of Varuna is recommended for Asura.

147. And the one plot to the north of Asura is (res'rved) for Śosha.

148. The one plot to the north of Śosha is (reserved) for Roga.

149. The one plot to the east of Pavana is recommended for Nāga.

150. The one plot to the east of Nāga is known to be for Mukhya.

151. The one plot to the east of Mukhya is stated to be for Bhallāṭa.

152. The one plot to the east of the god Soma is recommended for Mṛiga.

153. The one plot to the east of Mṛiga is reco mmended for Aditi.

154. Between Aditi and Īśāna should be one plot for Udita[1].

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[1] It should be noted (i) that out of the thirty-two plans details are given only of seven plans, namely, first, second, third, fourth (wanting in full details), fifth, eighth and the ninth; (ii) that though the eighth plan comprises sixty-four plots and the ninth eighty-one plots, the very same forty-five (rather forty nine, including four demonesses assigned to the outside) deities with various synonyms in some cases have been assigned to these plots, the shares of the deities varying from a half-plot to nine plots, thus the number of deities remains constant at least in the eighth and ninth plans, while the number of plots varies; and (iii) that these plans do not apparently admit of any other shape except square or quadrangular, although other shapes have been recognized in the plans of both buildings and villages, towns and forts (see the writer's *Indian Architecture*, pages 24, 49, 111, 118, 113—118, and chapters V. XI of this volume).

155-162. One should meditate upon the grandfather (i.e., the creator Brahmā) as seated on a lotus throne and as being of golden complexion, possessing four hands, four faces, eight eyes, wearing white

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Mānasāra's apparently incomplete treatment of the ground-plans is found almost in the same way in all the treatises dealing with the subject:—

(a) The *Vāstu-vidyā* refers only to the ninth plan (chapter III, 11—26).

(b) The *Manushyālaya chandrikā* (II, 20—32) also refers only to the ninth plan

(c) The *Kāśyapa-śilpa* (II, 1—12) also refers to only the ninth plan.

(d) The *Śilpa ratna* (VI, 1—50) makes a mention of all the thirty-two names of the plans, but summarises brief accounts not of only three as stated (तस्मात् संक्षिप्य तन्त्रेभ्यो वक्ष्येऽहमपि तत् त्रयम् ॥ ३४ ॥), but in fact of the first ten plans, while even the *Mānasāra* gives details of the first nine plans only.

(e) The *Mayamata* (VII, 1—47) summarises the details only of the ninth plan and does not refer at all to the other plans.

(f) The *Agni-purāṇa* (chapter 105, 1—16) does not refer to all the names even, but gives very brief accounts of the ninth and tenth plans.

(g) The *Samarāṅgana-sūtradhāra* (XI, 1—30) also does not refer to all the thirty-two names, but gives fairly complete details of the eighth, ninth and tenth plans; but all these three are obviously square or quadrangular plans, although triangular, hexagonal, octagonal, sixteen-sided, circular, elliptical, and crescent-shaped plans, as referred to above, are admitted (XI, 20):

त्र्यश्रे षडश्रे चाष्टाश्रे षोडशाश्रे च वृत्तवत् ।
वृत्तायतेऽर्धचन्द्रे च वास्तौ पदविभाजनम् ॥ २० ॥

(h) The *Bṛihat-saṁhitā* LII, 42—50, 55—56) also does not mention the thirty-two names at all, but gives summarised accounts of the eighth and ninth plans only. This treatise also refers to only the square or quadrangular plans.

Its commentator, Utpala, criticises the omission of circular, hexagonal, octagonal, decagonal and sixteen-sided plans of which, as he corroborates, mention is made in the *Bṛihat-saṁhitā* also (see the writer's *Indian Architecture* referred to above); therefore, he supplies, from a *Bharatamuni* and other

clothes, twisted hair, a diadem, a sacred thread and an outer garment, adorned with earrings, possessing eight ears and four necks, holding a water-pot and a rosary in the two left hands, and the foreparts or hind

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unnamed authorities, the following details of the triangular and the circular plans:—

यत्राचार्येण चतुरस्रे क्षेत्रे वास्तुनरः प्रदर्शितः न वृत्तषडश्र्यष्टादशाश्रिषोडशाश्रीणां क्षेत्राणाम् । लोके च गृहग्रामनगराणि दृश्यन्ते । तद्यथा । यनेनैवाचार्येणोक्तम् । तत्र षड्भिर्भेदः । वृत्तः समुद्गनामा इत्यादि ॥ ५५-५६ ॥

तथा भरतमुनिना त्र्यस्रं वृत्तं गृहमुक्तम् । तस्मादन्यशास्त्रादानीय प्रसङ्गादस्माभिरिह प्रदर्श्यते ।

तद्यथा ।

एकाशीतिपदे क्षेत्रे कर्तव्यं वृत्तपञ्चकम् ।
बाह्ये वृत्तद्वयं यत्तत्पदद्वात्रिंशता युतम् ॥
तृतीयं द्वादशपदं चतुर्थं तु चतुष्पदम् ।
केवलं पञ्चमं कार्यं ब्रह्मा पञ्चस्ववस्थितः ॥
शिख्यादयस्तु द्विपदा बहिर्विष्कम्भसंस्थिताः ।
अर्यमाद्याः सुराः सर्वे पदिकाः परिकीर्तिताः ॥

इति वृत्तक्षेत्रे एकाशीतिपदे ।

वृत्तानि चत्वारि समानि कृत्वा वास्तोश्चतुःषष्टिपदस्य सम्यक् ।
अधस्तदर्धेन च सूर्यवेदैर्विभज्यते वृत्तचतुष्टयं च ॥
शिख्यादयश्चैकपदे निविष्टाः पदद्वये चार्यमकादयश्च ।
आपादयश्च त्रिपदाः प्रतिष्ठाश्चतुष्पदश्चात्र पितामहः स्यात् ॥

इति वृत्तक्षेत्रे चतुःषष्टिपदे ।

एवमेव षडश्रिप्रभृतीनां विन्यासः कार्यः । त्र्यस्रे क्षेत्रे च ।
त्र्यस्राणि पञ्चक्षेत्राणि त्रिकोणे परिकल्पयेत् ॥
प्राचीदिगष्टधा कार्या कोणवर्ज्या ततः परे ।
रविभागविभक्ते ते वास्तुद्वाराणि तानि तु ॥
दितिं वायुं जलपतिं कोणेषु त्रिषु विन्यसेत् ।
ततः शिख्यादिकान् सर्वान् शेषेषु विनिवेशयेत् ॥
द्वितीये पूर्ववद्भागाः षोडशद्विगुणास्ततः ।
तत्रापि कोणत्रितये पूर्वोक्तान् विबुधान् न्यसेत् ॥
शेषेषु वास्तुकोष्ठस्थान् सुरांश्च विनिवेशयेत् ।
क्षेत्रे तृतीये चत्वारि सर्वशाखासु कारयेत् ॥

parts of two right hands imparting protection, and the remaining being in boon-giving attitude, decorated with all ornaments, bearing sacred (*tilaka*) marks on the cheek, assigned to the central plot (or plots) of

प्राग्गतिर्यग्मसाविश्री सविता च ततः परम् ।
विवस्वानिन्द्रमित्री च जयश्चैव हरस्तथा ॥
राजयक्ष्मा भूमिधर आपो वत्सयुतः स च ।
चतुर्थं पञ्चभिर्भागैः कृत्वा तन्मध्यगस्तथा ॥
पितामहो विनिर्दिष्टस्त्वस्मिन्नेषयं विधिरिति ।

A later passage in the *Mānasāra* (Chapter IX, 422 - 442) supplies the required explanation as to why (i) the full details of the fourth and fifth plans and of the eighth and particularly the ninth one have been given and (ii) the details of the other plans, especially, of the last twenty-three rather twenty-two have been altogether left out. From this passage it is clear beyond doubt that (*a*) these thirty-two ground-plans are not intended to be independent and absolutely separate plans, but (*b*) within a plan of a larger number of plots, plans of smaller number of plots may be marked and referred to by the technical epithets of the latter, and that, therefore, the details of those plans which are not described may be found out by merely multiplying the plans of which full details are given. This would, further, explain why (i) the same number of twenty-five deities are allocated to the plan of sixteen plots (i.e. Mahāpiṭha) as well as to the plan of twenty-five plots (i.e. Upapīṭha), and (ii) the same number of forty-five deities are allocated to the plan of sixty-four plots (i.e. Chaṇḍita) and to the plan of eighty-one plots (i.e. Parama-śāyika).

In plate II are given figures of the seven plans, drawn with details found in the *Mānasāra*, excepting those of the fourth one which have been supplemented from the *Silpa-ratna*. The tenth plan is also drawn from details supplied by the *Silpa-ratna*, *Agni-purāṇa*, and *Samarāṅgaṇa-sūtradhāra*. The triangular and the circular figures are based on the details as supplied by the commentator of the *Bṛihat-saṁhitā* from Bharata and others. These two figures are slightly different from those given in the *Bṛihat-saṁhitā* (between pages 672-673) by S. K. Dvivedi; our figures of the eighth and ninth plans are also materially different from those given by Dvivedi, whose figures do not seem to conform to the description of the *Bṛihat-saṁhitā* itself. Dr. B. B. Dutt's figures of these two plans (*Town-planning*, pages 145-146) also do not

all plans, and assuming these characteristic features for the purpose of creation.

163-167. The god Āryaman is meditated upon being, as usual, in the cow-like (*dhenu*) pose, possessing red complexion, four hands, one face, two eyes, wearing a bee-hive-shaped diadem, red clothes and outer garment, decorated with all ornaments, with two other (i.e. right) hands holding lotuses, and foreparts of two left hands imparting protection, the whole being in the boon-giving attitude.

168-169 The god Vivasvat is meditated upon as possessing white complexion, four hands, holding a snare and a goad with the two other (i.e. right) hands: the remaining features are stated to be like those of Āryaman.

170. Mitra should be of dark blue complexion: the rest (of his features) should be considered similar to those of the aforesaid (deities).

171-172. Bhūdhara (upholder of the earth) should be meditated upon as placed above (i.e. considered superior to) the presiding deity of architecture, possessing golden complexion, holding a lotus and a snare with the two other (i.e. right) hands: the remaining features being as those of the aforesaid (deities).

173-176. Apavatsa is stated to be of two hands, two eyes, adorned with bee-hive-shaped diadem, possessing white complexion and an extra (third) eye, wearing fine clothes of gold colour; decorated with all ornaments and (with hands) in boon-giving attitude and holding a snare.

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quite conform to the description of the *Mayamata* on which they are apparently based. Dr. Kern's figures of the very same two figures (J. R. A. S. 1873, pages 287, 289) are still more lacking in conformity to the description of the *Bṛihat-saṁhitā* on which they are based. Bhārati's figures based on Maṇḍana's *Vāstu-śāstra* need a passing mention only. T. A. Gopinatha Rao's figures (*Elements of Hindu Iconography*, pages 1, 11) do not refer to these plans but to the Parivara deities in a temple.

176-177. And Āpavatsya is meditated upon as possessing blood (red) complexion: the rest (of his features) are stated to be like those of the aforesaid (deities).

177-178. Savitrà should be likewise of blood (red) complexion; his two hands are held upwards, and the rest (of his features) should be as those of the aforesaid (deities).

179-182. Sāvitra should be meditated upon as possessing dark blue complexion and wearing red clothes and outer garment; Indra's complexion is red and Indrarāja's golden: each of these is decorated with all ornaments and adorned with good features and eyes: the rest (of their features) is directed to be like those of the aforesaid (deities).

183-185. (Each of) the two Rudras (i.e. Rudra and Rudra-jaya) possesses red complexion, two hands, three eyes, holds a trident, is in the boon-giving attitude, wears skin-clothes and outer garment, is adorned with twisted hair and diadem, and decorated with all ornaments.

186-190. One should meditate upon the image of Īśa (Śiva) as being seated on a bull accompanied by his consort, putting on tiger-skin clothes, possessing whitish complexion, adorned with all ornaments, carrying a tabor in the right hand and a doe in the left, the upper right hand being in the attitude of imparting protection and the (upper) left hand in that of bestowing a boon.

190-193. (One should meditate upon) Śachīpati[1] (rather Āditya) as possessing red complexion, two hands, three eyes, a chariot and an elephant as conveyance, carrying a gift and a goad, adorned with all ornaments, and wearing blue clothes, the sacred thread and an outer garment.

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[1]This epithet usually implies Indra who is already described (see lines 180 - 182), moreover between Īśa and Agni comes Āditya (see lines 127—130 and the plate); obviously, therefore, it refers to Āditya and not to Indra (see further explanation under note of the text).

194–197. (One should meditate upon) the god Agni as possessing a fire-like complexion, a ram for vehicle, two arms, three eyes, hair resembling flame, holding a large and a small sacrificial ladle in his two hands, accompanied by his consort goddess Svāhā, and decorated with all ornaments: the rest (of his features) should be like those of the aforesaid (deities).

198–201. One should meditate upon Yama (god of death) as seated on a buffalo, possessing three eyes and hair resembling flame, holding a trident in his right hand and a snare in his lower left hand, having a grey (lit. smoky) complexion and red clothes on, accompanied by his consort goddess Yāmyā, and adorned with all ornaments as stated above.

202–205. One should meditate upon Nir-ṛiti[1] as seated on a man, possessing two hands, two eyes, holding a club in his right hand and bestowing a boon with his left hand, possessing a dark blue complexion, accompanied by a goddess[2] of Indra, wearing red clothes, and adorned with a bee-hive-shaped diadem: the rest (of his features) should be as (stated) before.

206–209. One should meditate upon Varuṇa as seated on a crocodile (*makara*), accompanied by (his consort) Bharaṇī (i e. Varuṇāṇī), possessing two hands, two eyes, putting on earrings and a diadem, holding a snare and a goad, white in complexion, wearing red clothes, the sacred thread, an outer garment, and adorned with various (other) ornaments.

210–212. One should meditate upon (the wind) god Vāyu as seated on a deer, accompanied by (his consort) Mārutī, possessing two hands, three eyes, holding a snare and conferring a boon; the rest (of his features) should be like those of the aforesaid (deities).

[1] This is obviously a synonym of Gagana and Pitṛi (see lines 59, 143; 67, 90, 128).

[2] This should imply some one other than Indrāṇī who is the chief wife of Indra: it is not usual for a goddess to accompany formally a god other than her husband.

212-216. The image of Śaśin (i.e. Soma) is described here: one should meditate upon the Soma-image as possessing two hands, two eyes, holding two lotuses, seated on a horse, accompanied by (his consort) Chandrikā, having a white complexion, wearing a white garment, the sacred thread and a diadem, and adorned with all ments as stated to fit.

217-220. One should meditate upon Parjanya as having a red complexion, Jayanta a dark blue complexion and Mahendra a yellow complexion, and (each) possessing two hands and two eyes, wearing earrings, a diadem, adorned with all ornaments, holding a snare and a lotus (in two hands), and putting on red clothes and an outer garment.

220-224. (One should meditate upon) Satya as having a white complexion, Bhṛiṅgeśa as having a grey (smoky) complexion, and Antariksha as having a blue complexion, (each) possessing two hands and two eyes, (all) being in the boon-giving attitude, holding respectively a goad, a snare, and a trident, adorned with all ornaments, and the rest (of their features) being as before.

225-228. (One should meditate upon) Pūshan as having a red complexion, Vitatha a yellow complexion, and Gṛiha-kshata a black complexion, (each) wearing red and yellow[1] clothes, the three carrying a club, a pike, and a spear (respectively), (their two hands) holding two snares, wearing earrings and a diadem; the rest (of their features) is directed to be as before.

229-230. (One should meditate upon) Gandharva as having a red complexion; the complexion of Bhṛiṅga is like the colour of a collyrium, and that of Mṛiśa is grey (smoky), and the rest (of their features) should be as stated before.

231-233. (One should meditate upon) Dauvārika as having a dark blue complexion, Sugrīva a red complexion, similarly, Pushpadanta

[1] The expression may imply a red garment for Pūshan and a yellow garment both for Vitatha and Griha-kshata, or a yellow garment with red borders for all the three.

as being black (in complexion), (all) holding (in their two hands) a club and a snare; the rest (of their features, including) the garment and two[1] diadems, is directed to be as before.

234-236. (One should meditate upon) Asura as having a black complexion; Śosha's complexion is grey (smoky); Roga (lit. disease) has a lean form, red eyes and a pale complexion and holds a pike and a skull; the rest (of their features) should be as stated before.

237-238. Nāga has a serpent's head, his two hands are yellow in complexion: (he should be meditated upon) as holding a mace and a pike and adorned with all ornaments.

239-241. (One should meditate upon) Mukhya as having an elephant's face and two hands, wearing a diadem, as putting on a red-coloured garment adorned with dark blue borders, and with two hands as holding a snare and a goad, and decorated with all ornaments.

242. (One should meditate upon) Bhallāṭa as having a ram's face, and the rest (of his features) should be as before.

243-247. One should meditate upon Mṛiga, whose face is like that of a deer, as having a deer's complexion, wearing a diadem and holding a pike and a shield; Aditi as having a blue complexion and holding a sword and a skull and adorned with a diadem and (other) ornaments; Udita as having a red complexion and the lion's face, and holding a club: the rest (of their features) should be as stated before. Thus are described those who are assigned to the plots other than those for the immortals (deities).

248-252. Charakī should be of a white complexion, Vidārī of a red complexion, Pūtanā of a dark blue complexion, and Pāpa-rākshasī of a blue complexion; thus are stated to be the four classes (of demoness): (their two hands) should hold a pike and a skull; they put on red clothes, they possess large fangs, their two eyes are terrible-looking, (they are furnished) with dishevelled red hair (on their head); (they

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[1] That is, Mukuṭa and Karaṇda as in other instances (see lines 164, 173 205, 207, 210, 228, etc.).

are respectively assigned) to the outside of the north-east and other corners (of the plan).

253. The presiding Spirit of the site is assigned to the plots (already) allocated to Brahmā and other deities.

254. This is known to be the Spirit of the site; his middle body is assigned to the plot (or plots) of Brahmā.

255. (His) head should be assigned to the plot of Ārya (i.e. Āryaman): he is known to lie by the north-east direction with his face turned downwards[1]

256-259. His left hand is stretched out by the corner line in the north-east; his left foot is stretched out by the corner line in the south-west; his right hand is stretched out by the corner line in the south-east; and his right foot is stretched out by the corner line in the north-west.

260-261. His right side is stated to be (assigned to) the plot of Vivasvat, and his left side should be assigned to the plot of Bhūdhara.

262. (One should know that) his penis is stated to be (assigned) to the plot of Mitra.

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[1] The other treatises obviously based on Mānasāra have improved the reading:

पूर्वोत्तरदिङ्मूर्धा पुरुषोऽयमवाङ्मुखोऽस्य शिरसि शिखी ।
(Bṛihat-saṁhitā, LII, 51 ed. Dvivedi.)

......................................शेते त्वधोमुखः ।
वस्तुत्रिभागमध्ये तु वंशाः षट् प्रागुदङ्मुखाः ॥ (Mayamata, VII, 53.)

A curious explanation is given in the Śilparatna as to why the Spirit of the site should lie with face turned downwards; it is stated that this Spirit lay on the feet of Īśa (Śiva), the master of north-east quarter:

यद्देशाद्दिङ्मुखं शंभोः पादयोः पतितोऽसुरः ।
शुक्रेण देवैरुषितस्तथैवाभूद् विभोर्वरात् ॥ २८ ॥
तथैवाधोमुखोऽद्यापि वास्तुरीशानदिक्छिरः ॥ २८½ ॥
(Śilparatna, VII, 28.)

263-265. His two ears, (several) vital arteries (*nāḍi*) and veins (*śirā*), six backbones and one heart are stated (to be assigned to the

। सिराः कर्णगता याः स्युस्ता नाड्यः परिकीर्तिताः ॥ २५ ॥

(Samarāṅgaṇa-sūtradhāra, XII, 25.)

The same authority refers to the s(Ś) and *Vaṁśa* elaborately :—

सिरा वंशानुवंशाश्च सन्धयः सानुसन्धयः ॥
मर्माण्यथ महावंशा लक्ष्मा वास्तुशरीरगाः ।
ज्ञात्वा सिराः सानुसिराश्च नाडीवंशानुवंशानपि वास्तुदेहे ।
यत्नेन मर्माणि फलानि चैषां वेधं त्यजेद् यस्त्वपैति नापत् ॥

(Ibid. XII, 24—25, 38.)

तेषां स्थानानि मर्माणि सिरा वंशाश्च तेषु तु ॥ ६ ॥
मुखे हृदि च नाभौ च मूर्ध्नि च स्तनयोस्तथा ।
मर्माणि वास्तुपुंसोऽस्य षण्महान्ति प्रचक्षते ॥ ७ ॥
चतुर्ष्वपि विभागेषु सिरा याः स्युश्चतुर्दिशम् ।
मर्माणि तानि चोक्तानि द्वारमध्यानि यानि च ॥ १० ॥

(Ibid. XIII, 6—7, 10.)

According to the *Bṛihat-saṁhitā* as explained by its commentator, Utpala, both *Vaṁśa* (backbone) and *śirā* (artery or vein) would be identical with the several east-west and north-south lines by which the ground-plans are divided into several plots assigned to the aforesaid forty-five deities :

रोगाद्वायुं पितृतो हुताशनं शोषसूत्रमपि वितथात् ।
मुख्याद्भृशं जयन्ताच्च भृङ्गमदितेश्च सुग्रीवम् ॥ ६१ ॥
तत्सम्पाता नव ये तान्यतिमर्माणि सम्प्रदिष्टानि ।
यच्च पदस्याष्टांशस्तत् प्रोक्तं मर्मपरिमाणम् ॥ ६२ ॥
पदहस्तसङ्ख्यया सम्मितानि वंशोऽङ्गुलानि विस्तीर्णः ।
वंशाश्यामोऽध्यर्धः शिराप्रमाणं विनिर्दिष्टम् ॥ ६३ ॥
रोगाद्वायुमित्यादिकं सूत्रषट्कं वंशशब्देनोच्यते ।
शिराशब्देन पूर्वापरायता दक्षिणोत्तरायताश्च दश दश रेखा ज्ञेयाः ॥ ६३ ॥

(Bṛihatsaṁhitā, LII, 61—63.)

The *Agni-purāṇa* specifies these lines :—

प्राणाख्या दशधा नाड्यस्तासां नामानि च ब्रुवे ।
शान्ता यशोवती कान्ता विशाला प्राणवाहिनी ॥

other plots)[1] ; one spinal cord should extend from west to south but the chief one extends from east to north. Thus the Spirit of the site (lies) hump-backed, crooked and lean.

सती वसुमती नन्दा सुभद्राऽथ मनोरमा ।
उत्तरास्या दशान्याश्च पकाशीत्यङ्घ्रिकारिका ॥
हरिणी सुप्रभा लक्ष्मीर्विभूतिर्विमला प्रिया ।
जया ज्वाला विशोका च स्मृतास्ताः सूत्रपाततः ॥

(Agnipurāṇa, chap. 105, 2—4.)

These two sets of ten names each, with an additional set are read slightly differently in the *Viśvakarma-prakāśa* from which Sudhākara Dvivedi has quoted in his edition of the *Bṛihatsaṁhitā* (part II, page 674) without reference to chapter and verse :—

शान्ता यशोवती कान्ता विशाला प्राणवाहिनी ।
सती च सुमना नन्दा सुभद्रा सुरथा तथा ॥
पूर्वापरा गता ह्येता उदग्यास्याश्रिताः शृणु ।
हिरण्या सुव्रता लक्ष्मीर्विभूतिर्विमला प्रिया ॥
जया काला विशोका च तथेन्द्रा दशमी स्मृता ।
धन्या धरा विशाला च स्थिरा रूपा गदा निशा ॥
विभवा प्रभवा चान्याः सौम्ययाम्याश्रिताः शिराः ।

[1] That this Spirit of the site is a further device, by whose limbs the several plots of a ground-plan once assigned to a list of forty-five, rather forty-nine, deities are referred to is clear from the following :—

देवतानां पदैरित्थं संविभक्तैः पृथग्विधैः ।
स्थपतिः प्रयतः कुर्याद् वास्तुमित्थं पुमाकृतिम् ॥
उक्तानि वास्तुपुरुषस्य यथावदित्थमङ्गानि वास्तुपददैवतनामभेदाः ।
वर्णाश्च वास्त्ववयवेष्विह षोडशैव ग्रमोऽथ दैवतवशेन पुरे निवेशम् ॥

(Samarāṅgaṇa-sūtradhāra, XIV, 1, 35.)

उत्ताने नैर्ऋताशाविनिहितचरणे यावदीशानशीर्षे ।
जातें तावन्निषेदुः स्थिरमिह विबुधास्तस्य देहे क्षणेन ॥
ता देवता वास्तुशरीरसंस्थाः सन्तर्पितास्त्विष्टफलप्रदाः स्युः ।

(Manushyālaya-chandrikā, II, 28, 32.)

The assignment of the limbs of the Spirit of the site over the plots of all the forty-five deities is specified more elaborately in the *Samarāṅgaṇa-sūtradhāra* (XII, 22—24, XIII, 8—9, XIV, 2—32), *Mayamata* (VII, 50—54), *Śilparatna* (VII, 28—38), and the *Manushyālaya-chandrikā* (II, 29—31).

266-269. This (primary) object of architecture[1] should be carefully kept in view in connection with buildings of gods and men[2]. Root as it is of (all) good and evil (in architectural matters) none of its parts should be rendered defective[3]. If through ignorance (of the architects) any of its (several) parts be rendered defective the master

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[1] Figuratively this would, first, refer to the Spirit of the ground-plan (i.e. Vāstu-purusha), secondly to the forty-five deities who, as the occupants of the several plots into which a ground-plan is divided, are identical with the limbs of the Spirit, but ultimately and architecturally, to the ground plan itself.

[2] Those imply all kinds of temples and residential buildings, as well as all kinds of villages, towns, and forts, etc., compare the following :—

गृहनगरग्रामेषु च सर्वत्रैवं प्रतिष्ठिता देवाः ।

तेषु च यथानुरूपं वर्णा विप्रादयो वास्याः ॥ ६७ ॥

एवमनेनैव प्रकारेण गृहे वेश्मनि नगरे पुरे ग्रामे च एतेष्वपि सर्वत्र सर्वस्मिन् देशे देवाः सुराः प्रतिष्ठिताः परिकल्पिताः । एतदुक्तं भवति । यथा गृहे वास्तुनरस्य परिकल्पना कृता तथैव नगरे ग्रामे च कार्या । तत्रापि च यानि मर्माणि तानि प्राग्वच्चिन्तनीयानि । तेषु नगरग्रामेषु विप्रादयो ब्राह्मणाद्या वर्णा ब्राह्मणक्षत्रियवैश्यशूद्रा यथाक्रमं वास्या विवासनीयाः । यत्र दिग्भागे यस्योचितं तत्र वासयेदित्यर्थः ॥ ६७ ॥

(Bṛihatsaṁhitā, LII, 67.)

[3] How this defect may occur has presented difficulties to several authorities on the subject.

The *Bṛihat-saṁhitā* has attempted an unscientific and mythological explanation. According to it the plots assigned to Brahmā and other superior deities should not be polluted by throwing remains of food and other refuse on them: this explanation, if it architecturally imply anything at all, would mean that certain plots of the ground-plan should be reserved as sacred places :—

सुखमिच्छन् ब्रह्माणं यत्नाद्रक्षेद्गृही गृहान्तःस्थम् ।

उच्छिष्टाद्युपघाताद्गृहपतिरुपतप्यते तस्मिन् ॥

गृही गृहपतिः सुखमिच्छन् सुखमभिलषन् गृहान्तःस्थं गृहमध्यगतं ब्रह्माख्यं पितामहं यत्नात्सर्वप्रयत्नेन रक्षेत्पालयेत् । यतस्तस्य ब्रह्मण उच्छिष्टाद्युपघातात् । उच्छिष्टमशुचि ।

himself becomes (absolutely) ruined. Therefore, the wise architects should on no account do more or less than (lit. accept or reject) what is laid down (in this connection).

आदिग्रहणादन्येष्वाद्युपस्करणं भाण्ड: । एतेषां तत्र स्थापनादुपघातो भवति तस्मात्तस्मिन् गृहे गृहपतिर्वेश्मस्वामी उपतप्यते उपतापं प्राप्नोति ॥ ६४ ॥

(Bṛihatsaṁhitā, LII, 64.)

Samarāṅgaṇa-sūtradhāra has attempted a little more scientific explanation. According to him it appears that no attempt should be made to utilise the points of intersection of the several lines by which a ground-plan is divided into several plots:

वंशाष्टकस्य यः सन्धिः स सन्धिरिति कीर्तितः ॥
ये पुनः स्युस्तदङ्गानां प्रोक्तास्ते चानुसन्धयः ।
वालाग्रतुल्यं सन्धीनां प्रमाणं परिचक्षते ॥
तदर्धमनुसन्धीनां प्रमाणं समुदीरितम् ।
यत्नैतानि सन्त्यज्य वास्तुविद्याविशारदः ॥
द्रव्याणि प्रयतो नित्यं स्थपतिर्विनिवेशयेत् ।
महावंशस्य नाक्रान्तिं कुर्याद् द्रव्येण केनचित् ॥
इतरेषु पुनर्द्रव्यं मध्यवंशेषु सन्त्यजेत् ।

(Samarāṅgana-sūtradhāra, XII, 30—34.)

The explanation submitted by the *Mayamata* carries an architectural importance. According to it the limbs of this Spirit (Vāstupurusha) i.e. the plots assigned to them, should not be trespassed by certain parts of a building; this would apparently mean that certain parts of a building should not be built upon some plots of the ground-plan :—

..........................इत्येष पुरुषः स्मृतः ॥
गृहे गृहे मनुष्याणां शुभाशुभकरः स्मृतः ।
तस्याङ्गानि गृहाङ्गैश्च विद्वान् नैवोपपीडयेत ॥
आधयस्तु यथासङ्ख्यं भर्तुरङ्गे तु संस्थिता ।
तस्मात् परिहरेद् विद्वान् पुरुषाङ्गं तु सर्वथा ॥

(Mayamata, VII, 54—56.)

270-271. Those (ancients) recognised (the custom) of offering sacrifices (on the occasion of undertaking an architectural operation) to Brahman (i.e., the Spirit of the site) and all the other deities, (therefore) devotional offerings should be made to all the deities assigned to their respective plots (of the ground-plan)[1].

Thus in the *Mānasāra*, the science of architecture, the seventh chapter, entitled:

The description of ground-plans.

The evil consequences of the defects in the several limbs or plots are more elaborately specified in all these treatises than in the *Mānasāra* :—

दक्षिणभुजेन हीने वास्तुनरेऽर्थक्षयोऽङ्गनादोषाः ।
वामेऽर्थधान्यहानिः शिरसि गुणैर्हीयते सर्वैः ॥ ६५ ॥
स्त्रीदोषाः सुतमरणं प्रेष्यत्वं चापि चरणवैकल्ये ।
अविकलपुरुषे वसतां मानार्थयुतानि सौख्यानि ॥ ६६ ॥

(Bṛihat-saṁhitā, LII, 65-66.)

महावंशसमाक्रान्तौ भवेत् स्वामिवधो ध्रुवम् ॥
वर्षेण तपनाद् भीतिं वंशानां पीडनाद् विदुः ।
उपमर्माणि रोगाय मर्माणि कुलहानये ॥
उद्वेगायार्थनाशाय सिराश्च स्युः प्रपीडिताः ।
कलिः स्यात् सन्धिविद्धेषु पीडितेष्वनुसन्धिषु ॥
तस्मादेतानि सर्वाणि पीडितान्युपलक्षयेत् ॥

(Samarāṅgaṇa-sūtradhāra, XII, 34—36.)

[1]This refers to a time-honoured custom which is still observed. This is the subject-matter of the next chapter. It should be noted that, as a rule, the subject-matter of a chapter is introduced in the concluding lines of the immediately preceding chapter, a practice which is also followed by Vitruvius in his treatise on architecture.

CHAPTER VIII

THE SACRIFICIAL OFFERINGS

1. The rules for sacrificial offerings are now briefly stated in this science (of architecture).

2. The offerings should be made on the occasion of the planning of villages, etc.[1]

3-4. (At first) the ground should be cleansed and then the plots of gods should be marked either in the Maṇḍūka plan or in the Parama-śāyika plan.

5. Offerings should be made to Brahmā and other gods as well as to the Rākshasas (demons).

6-7. The architect should fast overnight and with pure body and cheerful mind, and putting on his best clothes should collect the requisites for the offerings.

8-11. In the morning of the following day the architect accompanied by a girl or putting the sacrificial things collected (overnight) on a plate in the hand of a courtesan wearing gold and other ornaments, and himself holding the same plate with his left hand, should offer, reciting (proper) incantation, these things, by throwing them (severally) with his right hand.

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[1] This includes all kinds of villages, towns, forts, commercial cities, as well as all kinds of temples and residential buildings :—

गृहे गृहे मनुष्याणां विबुधानां तथैव च ।
ग्रामखेटपुरादौ वा (च) कार्यं स्याद्वास्तुपूजनम् ॥

(Śilpa-ratna, VII, 39.)

12. Thereafter making a joint offering of all things (*sakalī-karaṇa*)[1] he should cause benediction to be pronounced.

13-15. Amidst all auspicious sounds, the offerings should be made to Brahmā and all gods in order by pronouncing their names separately with the mystic syllable *om* at the beginning and *namaḥ* in conclusion[2].

16. For temple purposes (i.e. on the occasion of building a temple) the ordinary offerings, and for village purposes the special offerings should be made.

17. Curdled milk and boiled rice: all these are known as ordinary offerings.

18-19. Then I shall describe the offerings to Brahmā and the other gods consisting, in addition, of unhusked grain (*akshata*) incense (*dhūpa*) and lamps, which are known as special offerings as stated in the sacred scriptures.

20-21. One learned in the sacred scripture should make offerings to Brahmā consisting of a wreath of flowers, perfume, incense, milk, honey, clarified butter, milk-pudding and rice, together with parched (or fried) grain.

22-23. Thereafter should be offered delicious fruits to Āryaman; sesame, rice and curdled milk to Vivasvat, and the same with curdled milk to Mitra.

24. To Mahīdhara (i.e. Bhūdhara) should be given condensed milk (*kashīra*); this is known to be the offering to deities assigned to the interior plots.

25-27. The same (as those to Mahīdhara) are stated to be the offerings to Parjanya; flowers and fresh butter should be given as

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[1] Literally, gathering all things together which consist of eight kinds of grains such as sesamum, barley, rice, etc., sandal paste, clarified butter, sugar and honey, etc.

[2] In making offerings, it is the custom to address the deities with the formula *om* and conclude the ceremonies with *namaḥ*, e.g., *om Gaṇeśāya namaḥ*

offerings to Jayanta, flowers and cake to Mahendra, honey and perfumes to Bhāskara (i.e. Āditya), and honey to Satya.

28-29. Fresh butter is said to be the offering to Bhṛiśa; thereafter offerings to Gagana (i.e. Antariksha) should consist of the turmeric powder, beans (phaseolus radiatus), milk, clarified butter and the *tagara* plant.

30-32. Unadulterated condensed milk is the offering for Agni, similarly rice-pudding for Pūshan, boiled rice for Vitatha, meat for Rākshasa (i.e. Gṛihakshata), and dried rice and cream for Antaka (i.e. Yama).

33. Aloe wood (*aguru*) and perfume should be the offerings for Gandharva.

34. Sea-fish are desired to be the offerings to Bhṛiṅgarāja.

35-36. Curdled milk and boiled rice are stated to be the offerings for Mṛiśa, a lump of boiled sesame rice for Nairṛiti (i.e. Pitṛi), and the (sesamum) grains for Dauvārika.

37-38. Thereafter sweetmeats are stated to be the offerings for Sugrīva, flowers and water for Pushpa-danta, and rice-pudding for Varuṇa.

39-40. Blood is the offering for Asura, grains of sesamum and rice for Śosha, dried fish is for Roga, and rice porridge with turmeric (seed) for Marut.

41-43. Parched grain is the offering for Nāga, and grains of rice for Mukhya, rice boiled with molasses for Bhallāṭa, and rice boiled with milk is for Śaśadhara (i.e. Soma), dried meat for Mriga, and sweetmeats for the other deity (i.e. Aditi).

44. Sesamum grains, flowers and fruits should be given as offerings to Udita.

45-46. Thereafter milk, boiled rice, clarified butter, and fish or corn should be provided as the offerings to Savitra, and molasses and water to Sāvitra.

47. All these should be the offerings to Indra, and the kidney bean (*mudga*) to Indrarāja.

48. Beans should be given as offering to Rudra, and meat to Rudrajaya.

49-50. Pure rice is stated to be the offering to Āpavatsa, and the seed of the white lotus (*kumuda*) to Apavatsa.

50. The offerings given to (those assigned to) the outside are stated here (i.e. below).

51-52. The meat of goat, conch and also venison, mixed with blood are said to be given as offerings to Pāpa-rākshasī.

53-54. The sesamum cake is desired to be the offering to Pūtanā, salt food to Vidāri, and grains of kidney bean (*mudga*) to Charakī.

55. In this way the deities should be worshipped for the safety of the village.

56-57. The deities beginning with Brahmā and ending in Āpava are placed in the plots assigned to the gods (in the interior). And all other gods should always be outside this part.

58-59, 'May it please you for the protection of the village', having pronounced this incantation, prayer should be made to these (*Bali*) gods.

60-61. In matter of sacrificial prayer, the architect should meditate on his own Śiva (i.e. special deity). Why this (should be done), in order to propitiate the gods as well as the evil genii and goblins.

62-64. If all details of the ground-plan be arranged without making these offerings, the site will be destroyed by the terrible demons; to avoid this defect, the sacrificial offerings must be made.

65-66. When these offerings are made by a builder in the village temple of Śiva (or other deity) there would be always prosperity, contentment, peace and welfare, and the devotion of the master (of the village).

Thus in the *Mānasāra*, the science of architecture, the eighth chapter, entitled:

The description of sacrificial offerings.

CHAPTER IX

THE VILLAGE

1. I shall now briefly describe in order the planning of villages in this science (of architecture).

2-4. Daṇḍaka, Sarvatobhadra, Nandyāvarta, Padmaka, Svastika, Prastara, Kārmuka, and Chaturmukha : these are the eight kinds of villages defined according to their shapes.

5—8. A village should be measured first, secondly, the ground-plan should be marked, thirdly, the sacrificial offerings should be made, fourthly, the village-planning should be carried out, fifthly, the house-plans should be designed and their foundations should be laid, and in the sixth place, the first entry into the house should be considered.

8-9. Of these, the measurement (of the village) will be stated now (below); the wise (architect) should measure with the rod of Dhanurgraha (i.e. 27 *aṅgula*) cubits.

10-14. The thirty-nine varieties of breadth begin with twenty-five rods, and end at one hundred and one rods, the increment being by two rods; this is said to be (the breadth of) the Daṇḍaka (village). Its length is described here: it is twice the breadth, the increment being by two rods; of these (measures) there may be one rod more or less in consideration of the auspicious measure under the *āya* rules[1].

15. This smallest type of the Daṇḍaka village is said to be fit for the retired life (*vāna-prastha*).

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[1]See lines 63—93 and the writer's *Dictionary of Hindu Architecture*, pp. 600—611.

16-18. The forty-two kinds of breadth (of the middle type of the Daṇḍaka) begin with thirty-one rods, and end at one hundred and seven (thirteen) rods, the increment being by two rods; and the length should be made as said above; this is the intermediate type of the Daṇḍaka (village).

19-22. The forty-five kinds of breadth of the large type of Daṇḍaka begin with thirty-seven rods and end at one hundred and twenty-five, the increment being by two. This type of Daṇḍaka is said to be fit for the gods of the world (i.e. the Brahmins).

23-24. The seventy-six kinds of breadth begin with fifty rods and end at two hundred rods, the increment being by two.

25-26. The one hundred and twenty-seven kinds of breadth begin with sixty-one rods and end at three hundred and thirteen rods, the increment being by two; (thus) both by odd and even number of rods the Sarvatobhadra (village) is measured: these are the length and breadth of the Sarvatobhadra (village), (which is) fit for the Brahmins and gods.

29-34. The two hundred and five varieties of breadth of the Nandyāvarta village are said to begin with one hundred and fifty-seven rods[1] and end at five hundred and sixty-five rods, the increment being by two; the length is equal to twice the breadth, the increment being by two rods: this is said to be the Nandyāvarata (village) fit for the residence of gods and Brahmins.

35. Thereafter the measurement of the village named Padmaka is described (below).

36-39. The breadth should begin with one hundred rods, and end at one thousand rods, the increment being by two. These are the four hundred and fifty-one varieties of breadth (of the Padmaka village); this Padmaka village is fit for the Brahmins as said by the ancients.

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[1]The number required is 157 which is made up thus $9+1+3\times7\times7=10+147$. The term *grāma* implies any number, (cf. guna-grāma=3, bhūta-grāma =5, rāga-grāma=7); herein 7 seems to have been intended.

40. These are the measures of breadth of the four kinds of villages (i.e. Daṇḍaka, Sarvato-bhadra, Nandyāvarta and Padmaka).

41-43. Thereafter the measure of breadth of the Svastika village is described (below): the breadth is said to begin with two-hundred and one rods, and end at two thousand and one rods, the increment being by twenty rods; and its length is said to be equal to its breadth, which should be increased by twenty rods; this Svastika is fit (for the residence of) kings.

44-48. Then the measure of breadth of the Prastara village is described: the breadth of Prastara should begin with three hundred rods and end at two thousand rods, the increment being by one hundred rods.

49-53. The breadth of the Kārmuka village should begin with sixty-five rods and end in odd or even number at five hundred rods, the increment being by two: this is the breadth of the Kārmuka (village); its length (also) is stated here: it is twice the breadth, the increment being by one hundred rods; this Kārmuka (village) is fit for the Vaiśyas (i.e. merchant class).

54-57. The breadth (of the Chatur-mukha village) should begin with thirty rods, and end at one hundred, the increment being by two rods; (its length) is twice the breadth, the increment being by two rods: this Chatur-mukha, thus described, is fit for the Śudras (i.e. the servant class).

58-62. (First) the length and the breadth of the main house (in a village) including its enclosures should be marked; inter-spaces should be left round the outside of this (main house), measuring from ten to one hundred rods, the increment being by two rods; thus the expansion of a village is effected from this (main house); and beyond this (limit) there should be erected (lit. attached) a rampart; outside this should be dug a surrounding ditch in all kinds of villages.

63. The farmulas of *Aya* and others (i.e. Vyaya, Ṛiksha, Yoni, Vāra, and Tithi or Aṁśa) as applied to (the measurement of) these villages are likewise described here.

64-67. The verification by the nine formulas beginning with *Āya* should be applied in ascertaining the correct one either out of the nine types of the length or (single) length, breadth or the circumference. According to some authorities the *Āya* and the *Nakshatra* are considered in connection with length, the *Tithi* and *Vāra* in connection with circumference, and the *Vyaya* and *Yoni* in connection with breadth.

68. When the length is multiplied by eight and then divided by twelve, the remainder is *Aya*.

69. When (the length) is multiplied by eight and then divided by twenty-seven, the remainder is *Kshapā*.

70. When (the breadth) is multiplied by nine and then divided by ten, the remainder is *Vyaya*.

71. When (the breadth) is respectively multiplied by three and divided by eight, the remainder is *Yoni*.

72. When (the circumference) is multiplied by nine and then divided by seven, the remainder is *Vāra*.

73. When (the circumference) is multiplied by nine and then divided by thirty, the remainder is *Tithi*.

74. In this (matter of selecting the correct measure) the expert (architect) should apply the set of six formulas beginning with *Aya*.

75-77. It is auspicious when there is no remainder left in the formula of *Āya*, also in the formula of *Vyaya*; similarly it is conducive to all prosperity if the remainder left in the formula of *Āya* is greater than in that of *Vyaya*, but it is all defective if the remainder left in the formula of *Āya* is less than in that of *Vyaya*.

78-79. It is auspicious (in the formula of Ṛiksha) if (the remainder shows) a full (i.e. odd) *Nakshatra*, and inauspicious if (the remainder shows) a corner (i.e. even) one.

80. For the next (lit. second) series (i.e. the *Yoni*) the auspicious one is ascertained by the countings (i.e. as they are arranged in accordance with their natural superiority).

81-85. It is auspicious if in the formula of *Vāra* the remainders show Friday, Thursday, Monday and Wednesday, the bad effect of a day, however, does not come into operation if there happen to be an auspicious *yoga* (conjunction of planets). If on any of the four days beginning with Sunday there happen to be the conjunction (*gaṇa*) of the stars, beginning with *Viśākhā* and ending at *Svāti*, they are respectively known as *Gaṇḍa-yoga*, *Mṛityu* (death)-*yoga*, and *Siddhi* (success)-*yoga* [1]

86-87. (In the formula of *Tithi*) the new moon day, *ashṭamī* (eighth day after the new or the full moon), and *navamī* (ninth day) should be avoided: all the remaining *tithis* are auspicious, they are recommended.

88. Except the eighth *Rāśi* (*Vriśchika*) all others are auspicious[2]

89. With regard to the *Gaṇa* all those, excepting the *Asura* and *Mānusha*, are auspicious[3].

90-93. (To find *Nayana*) the total of the days from Sunday to Saturday is multiplied by three, to which is added the *asvinī* or other *nakshatra* (of the day), and the whole is divided by the total days (of the week), the remainder of this should be *Nayana*: Oh wise architect, it numbers six to nine and is called the first *Nayana*, second *Nayana*, third *Nayana*, and so forth[4].

94. The description of the arrangement of the Dandaka village is now elaborated.

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[1] The calculation of these *yogas* does not agree with the rules given in the astrological works.

[2] This obviously refers to an alternative formula of *Tithi*, which is elsewhere called *Aṁśa*.

[3] This is not included in the six formulas, this may be a second alternative to *Tithi*; its formula is not given.

[4] This again seems to be the third alternative to the *Tithi* formula: it is calculated thus: $\frac{7 \times 3 + \text{the Riksha of the day}}{7}$, the remainder being the *Nayana*. For fuller details of the formulas see the writer's *Dictionary*, pages 600, 610.

95. It should be made quadrangular, not of equal sides, but rectangular.

96. The surrounding wall should be quadrangular and (thus) it (Daṇḍaka) is also rectangular in shape.

97-99. In this (village) there should be three rather five carriage-roads, (in this village) there may or may not be a (small) street running from end to end; one similar street may or may not run straight through the middle (of the village).

100. The width of a carriage-road should be one, two, three, four or five rods

101. The (other small) streets surrounding the central carriage-road should be made equal to one another.

102. All other (small) streets may or may not be equal to the carriage-roads in the interior (of the village).

103-104. The two carriage-roads running from end to end (through the centre of the village) may have one footpath each for the shelter (of the passers-by), but the main street should have two footpaths.

104-106. The breadth of a building (on the main street) should be three rods, otherwise the breadth of the house may be three, four or five rods in accordance with the requirement ; and its length should be twice or three times its breadth.

107-109. There should be made a surrounding ditch and around the outside there should be a wall ; four (main) doors should be made on the four sides, namely, the east and the others, and the smaller gates should likewise be made.

109-113. A temple of Vishṇu should be built in the outskirts of this village towards west, or inside it on the *Varuṇa* or on the *Mitra* part (both being in the west) ; and therein whichever image[1] of Vishṇu is desired should be installed ; and similarly the temple of Śiva should be made on the outside (of the village wall) towards the north-east or inside it in the *Parjanya* and the *Udita* parts (both being

[1] Śridhara, Vāmana, Vāsudeva, Janārdana, Keśava or Nārāyaṇa (see lines 259-261).

in the north-east), and therein a desirable image of Śiva should be installed.

114. This is the Daṇḍaka (village) which has thus been described; it is fit for the (residence of) Brahmins (lit. gods of the world).

115-117. (In this village) there may be an assemblage of twelve, twenty-four, fifty, one hundred and eight, or three hundred Brahmin (house-holders') houses, or of twelve houses of the anchorites (*maunin*. i.e. those who take the vow of silence).

118. If it be a hermitage it is stated to be situated in a forest valley or on the top of a hill.

119. If there be an assemblage of twenty-four *yatis* (hermits) it is called a *Grāma* (village).

120. If it be situated on the bank of a river, it is called a *Pura*.

121. When there is an assemblage of fifty *dīkshitas* (initiated Brahmins) it is called a *Nagara* (town).

122-123. When there is an assemblage of fifty and eight (Brahmin) house-holders, it is called *Mangala*; when there is an assemblage of one hundred (Brahmin house-holders) it is called a *Koshṭha*.

124. In case of other assemblages of Brahmins, the name (for the village) should be given according to one's choice.

125. All those things which are not specified here should be made according to the rules of the Śāstra (i.e. local custom).

126. The description of the arrangement of the Sarvatobhadra (village) will now be elaborated.

127-128. (In its shape) it should be made quadrangular of equal sides (i.e. square). Its plan should be made of the *Maṇḍūka* or the *Sthaṇḍila* type.

128-129. In the centre (of this village) should be constructed a temple of Brahmā, Vishṇu, or Śiva.

130-131. (In this village) there may be assemblages of any desired number of hermits known as *Tapasvin*, *Yati*, *Brahma-chārin* and *Yogin*, and of heretics (i.e. Buddhists and Jains) and of householders.

132–133. (In this village) there may be one, two, three, four, or five carriage-roads, together with a surrounding street; (of these) the internal carriage-roads should have one footpath each and the external one two footpaths.

134–137. In the *Paiśācha* (outer) part (of the village) there should be similarly made a (smaller) street running through all the plots; the temple of the great guardian deity should be made outside this *Paiśācha* part towards the north-east direction; the street in this part should have footpaths on both sides or should be of the frog-shape (*Nanyāvarta*), otherwise it may be made, as required, joining one corner with the other.

138–140. At the four corners (within the village), namely, the north east and the others, there should be a monastery or a temple or therein may be a guest-house, and the drinking-house should be built in the south-east; and the other public buildings may be built in any quarter according to one's liking (i.e. the requirement).

141. In the four corners at the end of the internal carriage-roads there should be the cloister (*maṭha*) for a preacher (*guru*).

142. For security (of the village) there should be furnished a surrounding wall, and a ditch around it.

143. At the four directions there should be the main gates, as well as the smaller gates in the same way as said before (i.e. as required).

144. The houses of all kinds of workmen (or labourers) should be on the high way.

145. In the south side (of the village) should be the rows of houses for the Vaiśyas (trading class) and the Śūdras (menial servants).

146. Between the east and the south-east should be the rows (of houses) of the milkmen (or cow-herds).

147. Beyond these should be the cow-sheds surrounded by walls for security.

148. Between the south and the west should be the houses of the weavers (lit. those who do the work of cloth-manufacturing).

149. Beyond these should be the houses of the tailors (and) also of the shoe-makers(lit. workers on leather).

150. Between the west and the north-west should be the houses of the black-smiths.

151. Beyond these should be the houses of the fishmongers and the butchers.

152-153. Between the north and the north-west should be the houses of the clerical community (Śrīkaras, otherwise called Kayasthas)[1]; therein should also be the houses of the physicians (vaidyas) rather of the medical caste (*ambashṭha*, i.e. people of mixed blood born of Brahmin father and Vaiśya mother).

154-155. On the outskirts of this (village) should be the houses of those who deal in the bark of trees (i.e. a kind of weaver or tanner); in the same quarters should be built the rows of houses of the oil men (i.e., those who deal in oil).

156-157. At some distance to the north, in the outskirts of the village wall, the wise man should build the temple of Vaishṇavī and Chāmuṇḍā.

158. Further from this, at a distance should be the cottage of the undertakers (i.e. the dead-body burners)[2].

159. The human dwellings on the outskirts of the village are thus described.

160-161. In the south, the west or the south west should be dug tanks suitable for supplying bathing and drinking water.

162. The best architect should get the rest done according to the rules of Śāstra (i.e. the custom).

163. The description of the arrangement of the Nandyāvarta (village) will now be elaborated

164-165. The length and the breadth should be measured in the aforesaid rod measurement; (of this village) the length and the breadth may be equal or the length may be greater.

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[1] See note under line 226, p 74.

[2] Originally the Chaṇḍālas were the traditional dead-body burners, but now in Bengal an outcaste earning their living mostly as fishmongers.

166-169. If the length and breadth (of this village) be equal the wise architect should make its plan of that type which is called Chaṇḍita or Maṇḍūka, but of the village whereof the length is greater (than the breadth) the plan should be of eighty-one plots (i.e. the Parama-śāyika type); otherwise (in the village) whereof the length and breadth are equal the plan may as well be of the Sthaṇḍila type.

170-174. If the plan (of this village) be of the Chaṇḍita type the four plots in the centre are known as the Brahmā part; outside this (centre) there should be twelve plots around known as Daivaka; beyond this twenty surrounding plots should be known as Mānusha; outside this twenty-eight surrounding plots should be known as Paiśācha[1]; thus is elaborated the Chaṇḍita plan (of eighty-one plots).

174-177. Now the Parama-śāyika plan is elaborated: (in this) there should be nine plots in the centre known as the Brahmā part; outside this there should be sixteen plots called Daivaka; beyond this should be twenty-four plots known as Mānusha; surrounding the outside of this are the thirty-two plots called Paiśācha.

178-180. In the Sthaṇḍila plan there should be only one plot in the centre assigned to Brahmā, eight parts (i.e. plats) (outside this) should be Daivaka, sixteen plots (beyond the latter) should be Mānusha, and outside this twenty-four plots are called Piśācha.

181-182. The expert architect should discreetly arrange these plots: of these the Paiśācha plots are (specially) stated (when the village) should be of the Nandyāvarta type (lit. frog-shaped)

183. The eastern carriage-road should run from north to south.

184. The southern street should run from east to west.

185. The western street should run from south to north.

186. The northern streets should run from west to east.

187. The surrounding streets of the Nandyāvarta (village) are thus stated by the experts

[1] The Brahmā part represents the first round, the Daiva the 2nd round, the Mānusha the 3rd round, and the Paiśācha the 4th round.

188-190. One foot path (running) from the root to the top should be attached either to the two internal streets running from south to north or to the two internal streets running from east to west; and the remaining two at the two sides (of the other two) are stated by the ancient (architects) to have two footpaths each.

191. Similarly should be the external roads, the internal roads are stated here.

192-193. They should be large streets (*rathyā*) both lengthwise and breadthwise; there should be one, three, five or seven (of these) streets (*vīthī*) furnished with two footpaths beginning from the root.

194-195. (In place of these *large streets*) there may be constructed one, two, three, four or five (smaller) roads (*mārga*); in these (smaller) exterior roads (*mārga*) there should not be made any footpath.

196. A street (*vīthī*) should be furnished with footpaths, while a road (*mārga*) should be without a footpath.

197. A large road (*mahā-mārga*) as well as all the streets (*vīthī*) should be consolidated with *kankar* (nodular limestone.)

198. Between these (large roads and streets) should be constructed lanes (*kshudra-mārga*) straight as a rope.

199-201. The width of the streets (*vīthī*) should be three, four, five, six, seven, eight, nine, ten, eleven or twelve rods; some of these streets may be wider than others, or all may be of the same width.

202-205. The width of the large road (*mahā-mārga*), should be equal to the width of a street (*vīthī*) of nine rods width ; the width of the street (*vīthī*) in the middle is also desired to be equal to the width of the large road (*mahā-mārga*) : similarly the width of a lane (*mārga*) should be equal to (that of) a street (*vīthī*) in the middle (i.e. interior of the village), or the former may be one-eighth less, three-fourths, or half of the latter.

206-208. The width of a large road (*mahā-mārga*) should be equal to or three-fourths (of the width) of all other streets (*vīthī*). And the width of a narrow lane (*kshudra-mārga*) should be three-fourths or half of it (i.e. the width of the large road).

209. Thus is elaborated the (street) plan (of the Nandyāvarta village which is) fit for (the residence of) Brahmins.

210-212. (In this village) there should be an assemblage of fifty and eight, one hundred and eight, three hundred, one thousand and eight, three thousand, or four thousand Brahmins.

213-214. When (all the second, third and fourth rounds known as) Daiva, Mānusha and Paiśācha parts (of this village) are filled with (i.e. inhabited by) the Brahmins it is called Maṅgala; whoever plans the village (should remember this).

215. When (all these parts are) inhabited by the Kshatriyas, the Vaiśyas, and other castes it (this village) is called Pura.

216. When (the same parts are) fit for (i.e. inhabited by) the Vaiśyas, the Śūdras and others it (this village) is called Agrahāra.

217-219. In this village (when inhabited by people of all castes) the houses of the Brahmins should be situated in the parts ending at the Mānusha part (i.e. including the Daiva part); the royal palace should be situated in the Daiva, the Mānusha and the Paiśācha parts; and the houses of the Vaiśyas, the Śūdras and others are situated in the Paiśācha part.

220-221. In the Paiśācha part there should be two, three, four, five, six or seven streets, and their width should be as stated above.

222. The houses of the Vaiśyas should be situated on the first street in the south.

223-225. In the Varuṇa part (west) should be the Emperor; this rule refers to his palace; similarly the royal palace may be situated in the Mitra (west), the Jayanta (north-east) or the Rudrajaya (north-west) part; in the same parts should also be the houses of the warrior-class.

226. In some part in the south-west should be situated the edifices of the clerical community (Śrīkaras)[1]

[1]Obviously same as Śrīkaraṇa, a subcaste of the Kayasthas, originally those who used to write *karaṇas* or legal documents, hence the clerical community or clerks.

227–228. In the Asura or Śosha part (both in the west) should be the houses of the chiefs (*Sāmantas*) and others; therein should also be the palaces of the ministers and the residences of the nobles (lit. Lords, *svāmika*).

229. The houses of the priests should be situated in the Sugrīva and Pushpa-danta parts (both in the west).

230. In the Dauvārika and Sugrīva parts should be the houses of the police (*rakshakāra*).

231–232. In the Gandharva, the Roga or the Śosha part should be the houses of the drummers (*vādyakas*)[1] and others; therein should also be the halls fit for the dancing (or music) of courtesans.

233. In the Vāyu (north-west) or the Nāga part should be the houses of the architects (and artisans).

234. In the Nāga or the Mukhya part should be the houses of the *Netra-ratna-kara*[2].

235. In the north should be the houses of the makers of armor.

236. In the Aditi and Udita parts should be the houses of the physicians and the like.

237. In the north-east or the Jayanta part should be the houses of the village-watchmen.

238. In the Mahendra (east) or the Satyaka part should be the houses of the *Karṇikāras*[3].

239. In the Bhṛiśa or the Antariksha part should be the guest-houses (lit. house for inviting people in, i.e. reception)

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[1] Outcastes living by the professional beating of drums and other music at the festivals of marriage, birth, etc.

[2] Literally, makers of eye-jewels (? spectacles) or eye-paints; a class of people, a kind of jewellers, opticians, or steiners.

[3] Compare Karṇi-ratha, meaning litter or palanquin (see *Raghuvaṁśa*, XIV. 13; *Rājataraṅgiṇī*, VII, 479); the Kahāras of North India, whose caste profession is to carry people by litter or palanquin, may be the representatives of the Karṇikāras.

240. (The arrangement of houses in) the first round is thus (elaborated). The arrangement of houses in the second round will be described (below).

241-242. On the eastern street should be situated the rows of houses of the oil men. In the same part should also be various other edifices as well as the houses of the potters.

243-244. The rows of houses of the fishmongers as well as of those who deal in meat (i.e. the butchers) should be in the west, and those of the hunters in the south.

245. In the south-east or the north-west should be the houses of the washermen.

246. In the south or the east should be the houses of the dancers.

247. In the north or the south-west should be the houses of the tailors.

248. Thus (is detailed the house-plan) in the second round. The (arrangement of houses in the) third round will (now) be described.

249. In the south should be the rows of houses of the blacksmiths.

250. In the north or the south-east should be the houses of the basket-makers.

251. In the west or the east should be the houses of the weapon-makers.

252. In the north should be the rows of houses of the workers on leather (i.e. the shoe-makers and others).

253. In all the other rounds should be the houses of those who live by other kinds of work.

254. (The disposition of) the human dwellings (i.e. the residential buildings) are stated. The temples of gods will now be described.

255-256. The temple of Vishṇu should be constructed in the four quarters, namely, the Ārya and the others, towards the four directions

of the village (i.e. east, etc.) as well as in any other desirable part and direction.

257. The Vishṇu temple may otherwise be (built) in the outer part (of the village) towards some desirable direction.

258. The Vishnu temple should also be (built) in the four quarters, namely, the Indra (east), etc., as also in the Rākshasa part.

259-264. In the east is said to be (situated) the temple of Srīdhara (a particular image of Vishṇu), in the south of Vāmana (dwarf image of Vishṇu), in the west of Vāsudeva, Ādivishṇu or Janārdana (other images), and in the north is said to be the temple of Keśava or Narāyaṇa (other images); in the interior (of the village) towards the north-east direction may be any image of Vishṇu, according to one's liking; in the south-west or the north-east corner should be the temple of Nṛisiṁha (man-lion); and in the south-east corner should be the temple of Rāma or Gopāla (other incarnations of Vishṇu).

265-267. The temple (of Vishṇu) in the Mitra part should be made three-storeyed: in the first (i.e., ground) floor the image (of Vishṇu) should be in the erect posture, in the second (storey) it is stated to be in the sitting posture, and in the third (storey) it should be of the recumbent posture; or in the top floor should be installed the image in the erect posture and in the ground floor it should be of the recumbent posture.

268-270. The expert (architect) should construct the (main) door of the Vishṇu temples towards desirable directions; the temple (bearing the name) of Vishṇu should face the village, and that of Narasiṁha should turn the back upon the village; but when Lakshmī is (associated) with Narasiṁha the latter temple as well should face the village.

271-275. The temple of Śiva should be built, with back upon the village, in the quarter of Rudra, Rudrajaya, Indra, Indrajaya, Āpavatsa, Apavatsya, Sāvitra, Savitra, Iśa, Jayanta, or Parjanya; but when built in the east or west it should face the village.



276. The (main) door of the temples of all other images may be in any direction.

277-278. In the Dauvārika part or somewhere else at the same corner (i.e. south-west) should be the temple of Subrahmaṇya, or therein may be the temple of the Jainas, or of the Sugatas (i.e. the Buddhas).

279. The temple of Vaināyaka (i.e. Gaṇeśa) should be in the middle part of the four main directions (i.e. east, etc.) or in the intermediate quarters (i.e. north-east, south-east, south-west, and north-west).

280. In the Gandharva or the Bhṛiṅga-rāja part should be the temple of Bhārga (kāra) (a name of Śiva).

281. In the Mukhya or the Bhallāṭa part should be the temple of Sarasvatī (the goddess of learning).

282-283. In the Aditi or Mṛiga part is known to be (situated) the temple of Lakshmī (the goddess of wealth); in the same part should also be built the temple of the goddess Bhuvanā (i.e. the earth god-

284. In the outside part of the (village) gate should be built the temple of Bhairava for the sake of security.

285. In the Rākshasa or the Pushpa-danta part should be the temple of Durgā.

286. Outside the village towards the north should be built the temple of Kālī.

287-288. It should be at a distance of one *krośa* (or two miles) away from the village, where either towards the east or the north should be situated the dwellings of the undertakers (*Chaṇḍālas*); and to the north (of this part) should be the cremation grounds.

289. (Further) outside the village, towards the north, reside the (evil spirits known as) *Pretas*, *Bhutas*, *Aṁśas*, and *Daṇḍakas*.

290-291. For the security of the village there should be erected a surrounding rampart on the outside, beyond this should be dug a ditch (which is) fenced all round by railings.

292-293. Large gates should be constructed at the (middle of the) four directions as well as at the four corners : they should be either circular or square in conformity with the plan of the village and be connected with the rampart.

294-295. These large gates should be constructed in the east, north-east, south-east, south, south-west, west, north-west and, similarly, in the north (of the village rampart, as stated below).

296. A straight line should be drawn from the eastern gate to the western (to ascertain that the gates are exactly opposite to each other).

297. The southern and the northern gates should particularly be exactly in the same place (in each side).

298-301. The expert architect should draw a straight line by the middle (of the east-west ramparts), from the south to the north, and to the east of this line should be measured one cubit at the end of which should be constructed the southern gate ; and the corresponding one in the north of these two gates is stated to be made similarly at the end of one cubit to the west of the same line.

302-303. Four gates in the (middle of) four directions may or may not be desired by the wise ; but in the east and the west sides there may be one or two gates.

304. Round the furthest boundary, towards the four corners, gates should always be made.

305. All these are the large gates ; the smaller doors are now described.

306-309. In the Naga, Mṛiga, Aditi, Udita, Parjanya, Antariksha, Pūshan, Vitatha, Gandharva, Bhṛiṅga-raja, Sugrīva or Asura part : in any of these parts which one likes, the smaller doors should be made with their proper characteristic features.

310-312. The expert (architect) should in the very same way construct water-gates (or drains) in the Mukhya, Bhallāṭa, Mṛiga, Udita, Jayanta, Mahendra, Śatyaka or Mṛiśa part.

313. A (temple) pavilion should be built in the Brahmā, Agni or Mitra part.

314. In the Bhūdhara or the Asura part a public hall should be constructed.

315. The Nandyāvarta (village) has thus been described by the ancients learned in the science (of architecture).

316. Now the details of the plan and arrangement of the village, called Padma, will be described.

317–318. Its length and breadth being made equal, the surrounding wall on the outside should be quite circular, quadrangular (i.e. square), hexagonal or octagonal.

319. It (this village) should be laid out in the Chaṇḍita or the Sthaṇḍila plan, whichever is desired.

320. The residential buildings should be built in the (four corners of) six plots each divided by an oblique line.[1]

321. In those parts should always be constructed a (temple) pavilion or a public hall.

322. All the carriage-roads in the exterior as well as the surrounding ones should be furnished with footpaths.

323. (In this village) there should be four, five, six, seven or eight streets.

324. Across the middle there should not be made any street; (but) the gates should be made towards the four directions.

325. The rest should be made as stated before; thus is (described) the plan of the Padmaka village.

326. The details of the plan and arrangement of the Svastika village also will now be described.

327. With (equal) length and breadth as stated above it (this village) should be laid in the Parama-śāyika plan.

328. In the Paiśācha (i.e. the last) round as well as surrounding it (i.e. the village) are constructed the (large) carriage-roads.

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[1]Each corner consists of two full and four half-plots : two of these opposite full plots are divided into four half-plots by an oblique line colled *śūla* (see the plates).

329. The best architect should arrange the interior in the shape of the mythical cross (*svastika*).

330-332. There should be a street running straight from east to west by the middle of this village, and another running from south to north crossing the former (in the centre of the village); both these streets are stated to be consolidated at the middle with *kankar* (nodular limestone).

333-336. The street running towards the east extends from north to north-east; the street running towards the south extends from east to south-east; the street running towards the west extends from south to south-west; and the street running towards the north extends from west to north-west.

337-338. Thereafter (should be made) the surrounding street connecting the ends of those four streets: thus is made the *Svastika* (cross-like) street bearing something like the shape of a plough.

339-341. It is said by the learned that there should be two streets across the centre (of the village), and two by its top and two by its bottom, connecting the four directions and the four corners, and with four entrances towards the four directions and extending up to the aforesaid middle streets and ending by the four corners.

342-343. (A street is made running from east to west by the middle of (the north-western block formed by joining four points) from east to north-east (thence) to north and (thence) to the centre.

344-345. A similar street is constructed running from south to north by the middle of the two lines, (one) from the centre to the east and (another) from the south-east to the south (by joining the ends of which the south-eastern block is formed).

346-347. Another similar street is constructed running from east to west (by the middle of the south-western block (formed of four points) from the centre to the south and thence to the south-west ending at the west.

348-349. Similarly another street is constructed running from south to north (by the middle of the north-western) block (formed of

fourt points) from north-west to west and from north ending by the centre. The number of these (streets in the four blocks) may vary in accordance with the requirements (of the blocks).

350-352. These streets should have two footpaths, but the middle one should not have any footpath (it being reserved for conveyances), and its width should lessen towards the two ends; the outer (surrounding) streets should be furnished with two footpaths, the outside of which should be covered (with wall and ditch) by the wise (architect).

353. The (upper) part of the rampart should be connected with the wall and it (the rampart) should be furnished with a surrounding ditch for the sake of defence (lit. protection).

354-355. Their (i.e. of the wall and ditch) gates should be opened at the points of the mystic cross (*svastika*) towards the four directions; thus there should be eight main gates, two being on each side.

356-358. In this (village) the expert architect should (also) make the smaller gates at the Mṛiga, Antariksha, Bhṛingarāja, Mṛisa, Śosha, Roga, Aditi and Udita parts.

359-360. All the larger gates should resemble the shape of a plough, (and) each of the (smaller) gates should be furnished with two panels.

361. The rampart should be erected in the lower part (and) the wall in the upper part; and the watch-towers should be built upon the strategic (lit. the required) points (of the wall).

362-363. The wise man should for purposes of fighting (the enemy) place on the top of the watch-towers (built) upon the wall all the devices known as *yaksha*, *rudra*, *naṭa*[1], and others.

364. Inhabited by all classes of people the Svastika (village) is specially fit for (the residence of) kings.

365. The Svastika (village) has thus been described, it should also) be laid out in the Sthānīya and other plans.

[1] The *yaksha* is a living supernatural being, *Rudras* are those who drive away evil and run about and roar, and *Naṭas* are the sons of degraded Kshatriyas: all these were obviously used as a defence-force.

366-368. The royal palaces may be built at the central part of the four cardinal points or intermediate points; they may also be built, leaving out the Brahmā-plot, at the middle of the four plots (called) Ārya and others; the royal palace, as desired, of all any number of) storeys may be built (in this village) in the Sthānīya plan.

369-371. The palace of the Adhirāja (class of king) should be built at the middle of Varuṇa (west) plot (when the village is laid out) in the next plan (i.e. twelfth plan, called Deśya); and at the (middle of) Yama (south) plot (when laid) in the Saṁgrāma plan (i.e. the middle of four beginning with Stāniya, i.e. the thirteenth plan, called Ubhaya-chaṇḍita); and similarly at the (middle of) Soma (north) as also Indrajaya (south-west) plots when laid in the Vijaya plan (i.e. last of the four plans, i.e. the fourteenth one, called Bhadra).

372-377. The wise (architect) should build the palace of the Narendra (class of kings) at the Vivasvat and the Indrarāja plots in the Āgata (i.e. Deśya) plan and at the Soma and the Indra-rāja plots in the Saṁgrāma (i.e. Ubhaya-chaṇḍita) plan; at the Arka or Indra (both being in the east) and the Rudrajaya plots in the Vijaya (i.e. Bhadra) plan; and at the Mitra, Vivasvat or Ārya plot in the Sthānīya plan[1].

378-380. The palaces of the Pārshṇika and other (classes of) kings should be built, in all the four plans, namely, Sthānīya and others (i.e. Deśya, Ubhaya-chaṇḍita and Bhadra), at the Ārya and other plots in the four directions, but not anywhere and everywhere this should be preferred following the injunction as laid down in the (leading) treatises on architecture.

381-382. The temple of Vishṇu should be built at the Mitra, Varuṇa, Vivasvat, Indra and Mahendra plots, in all the four plans, beginning with Sthānīya.

1 This interpretation follows from a combination of line 372 with 376 and 373 with 377: this has been necessitated by the obvious, though unusual, construction of the unsatisfactory text.

383-385. The temple of Śiva (Īśa) which should be made with face turned towards the outside (of the village) is said to be built at the Indra, Indrajaya, Rudra, Rudrajaya, Āpavatsa, Apavatsa or Jayantaka plot (in all the four plans).

386-387. The Buddhist temples should be built at the Vāyu plot (in the north-west corner) and the Jain temples at the Nair-riti plot (in the south-west corner), or the edifices (i.e. these temples) may be situated at the Bhṛiṅga-rāja, Vitatha or Nāga plot.

388. The temple of Bhairava should be built beyond (the village wall) at one side of any of the gates in the four directions

389. The temples of Durgā and of Gaṇeśa should be built at the four cardinal and intermediate points.

390. The temple of (six-headed) Kārtikeya should be situated at the Sugrīva plot.

391. The temple of Jvara-deva (the god of fever) should be built at the Agni (south-east) or the Pūshan plot.

392. The Bhāskara (Sun) temple, as an alternative, should be built at the Āditya plot.

393. The Bhuvaneśa (the Lord of the universe) temple should be built at the Soma or Mukhya plot.

394. In all these plots as well as in the central plot should be built the temple of Vishṇu or Rudra.

395-397. Around these (temple) plots should be situated the residential buildings; [(in this residential quarter) the central street, (reserved for conveyances), should have one footpath and the outer street two footpaths; because herein being situated residential buildings the outer streets must have (sufficient number of) footpaths for the security (of pedestrians) [1].

398. Thus are described (the temples of) gods situated in the interior (of the village), those (built) outside (the village) should be located in accordance with one's liking.

[1] This is apparently out of place, the *Codex Architypus* has left out lines 396-397 which are, however, preserved by all other texts.

399-401. If the Phallus (of Śiva, called) Pāśupata is alone to be installed His temple should be built in the interior of the city (i.e. Svastika village) as befits; all the other Phalli[1] should be installed outside the town (i.e. the village) wall.

402-403. If Vaikhānasa (Brahmā) temple is to be built, His installation is preferred in the interior (of the village); the Vishṇu temple is stated to be built similarly, but the Pāñcha-rātra (Vishṇu) temple should be built outside (the village wall).

404-407. The temples (also of the followers) of Durgā, Gaṇapati Gaṇeśa), Buddha, Jina, Kārtikeya (Shaṇmukha) and others should be built outside the city (i.e. Svastika village), or even the temples of those gods may be constructed, there is no restriction about this, should they be desired to be installed, in all parts of the city (i.e. Svastika village).

408-409. The temple of Chāmuṇḍā (demoness) should be built facing the north, in the north-east beyond the village or at a great distance from it.

410. To the east of the temple of this (demoness) should be situated the cottages of the undertakers (Chaṇḍālas).

411-413. For the inspection of the army a suitable pavilion should be built on a raised platform outside the village towards the east, north, west, or south-west.

414. The best architect should do the rest at his discretion, as stated before.

415. The details of the plan and arrangement of the Prastara (village) will now be described.

416. The shape of the Prastara (village) should be either rectangular or square.

417. The ancients have said that this (village) is fit for the kings (Kshatriyas) or the Vaiśyas (traders class).

418-419. The architect should lay out this village in the plan of eighty-one plots (i.e. Parama-śāyika), the Chaṇḍita, the Sthaṇḍila, or any other plan he likes.

[1] Phalli are classified under several epithets (see chapter LII).

420-423. A large street in the Paiśācha part (last round of the plan) should be constructed, being furnished with two footpaths; this should be made around (the village); at its (Paiśācha part) end and in its continuation (lit. entrance) the Pechaka (of four plots) and Pīṭha (of nine plots) blocks should be planned being connected by streets, or the similarly (expanded) Mahāpīṭha (of twenty-five plots) block should be connected by streets.

424-425. Inside that part which is called Paiśācha the wise architect should make a street running from east to west and another running from south to north.

426-427. One street being constructed in the Pīṭha block there should not be any other street across the centre (of this village); but there should be made two streets each way in all directions as aforesaid (i.e. two running from east to west and two from south to north).

428. In the Mahāpīṭha block there should be three streets each way in all directions (i.e. three running from east to west and three from south to north).

429. Of all these large streets in this (village) the widths are specified below.

430-431. The widths of these large streets are stated to be six, seven, eight, nine, ten or eleven rods.

432-433. The (number of) plots constituting the several blocks (i.e. Pechaka and others) should be determined and these plots should be marked; and the ends of streets (made therein) should be continued (to the end of the blocks).

434-437. The circular road should be in or around the Paiśācha part; extending from the interior side of this (circular) street there should be three, five, or seven streets running towards the east and north; and there should be eight blocks; there should also be one, two, three or four smaller zigzag cross roads.

438. If the four plots (i.e. Pechaka) are to be connected (by roads) the four plots are marked by nine crossings.

439. If the nine plots (i.e. Pīṭha) are to be connected (the crossings should number) four times four (i.e. sixteen).

440. If the sixteen plots (i.e. Mahāpīṭha) are to be connected it should be marked by twenty-five crossings.

441-442. In the interior region of the Deva part (i.e second round) should be marked the blocks of four-plots (i.e. Pechaka) and of nine-plots (Pīṭha); the western parts of each of these blocks should conform to the shape of the (Prastara) village.

443-444. The gods should be installed by the wise architect in those plots as said before; (thus) the temples, etc., as well as the palaces of the kings should also be built as before.

445. The rows of houses for the Vaiśya (should be situated) in the interior region and at those parts (of the village, as mentioned above).

446. All the working classes should be housed in those parts of the Paiśācha round (as stated before).

447-448. The stalls of all sorts of buying and selling (should be situated) by the (sides of the) large (carriage) roads, wherein they (i.e. the streets) should be furnished with two footpaths and be connected with the palace of the Mahārāja (class of) kings.

449-451. The surrounding wall should be erected on the outside (of the village) being connected with a ditch around it; therefrom the large gates should be opened at the points where the large streets end; and there should be four, eight or twelve (such) gates.

452. The architect most deeply versed in the science (of architecture) should do the rest of the Prastara (village) as before.

453. The details of the plan and arrangement of the Kārmuka village are now described.

454. Its breadth should be equal to its length or the length may be greater.

455-457. This (village) should be laid out as (either of three types, namely) the Pattana, the Kheṭaka, or the Kharvaṭa: it is called Pattana when it is (predominently) inhabited by an assemblage of the Vaiśyas; Kheṭaka when it is mainly inhabited by the Śūdras; and Kharvaṭa when it is chiefly inhabited by the *Prithulomans* (broad-haired, ? Kshatriyas),

458. The Kārmuka (village) should be constructed on the bank of a river or a sea.

459-461. There should be a junction at the head of the streets; in accordance with the suitability of the quarter the wise architect should make a street connecting west and north, another between south and east, one between north and east, and one between south and west.

462-463. By the outside part each pair of these streets should look like a bow (*kārmuka*): there (in each quarter) should be made one, two, three, four, or five (of these) streets.

464. All the large carriage-roads should have two foot paths and the small zigzag cross roads may be made (with one or more footpath) as one likes them to be.

465. The wise architect should separately mark the plots in the four quarters as stated before.

466. The architect deeply learned in the science (of architecture) should make them (i.e. the plots) proportionate to the size of the village.

467. Śiva (Iśvara) and other gods should be installed in the plots specified before.

468. It (this village) should be furnished with as many gates as one likes, but there may or may not be a rampart.

469. The Vishṇu temple should be built at the junction of (lit. at the place between) two streets.

470. The Śiva (Śaṅkara) temple should be (built) at the junction (of streets) if there be any in this village.

471. Otherwise the temple of Vishṇu or Śiva may be situated at a place where there is no street.

472. It is auspicious to look at the god Vishṇu from the gate of the village: (His temple, therefore,) should have its back turned towards the village.

473. Thus is described the Kārmuka village, the rest of it being made as stated before.

474. The details of the plan and arrangement of the Chaturmukha village will now be described.

475. It (this village) should be made quadrangular with (four) equal sides (i.e. square) or rectangular in shape.

476. The surrounding wall should be quadrangular as well (i.e. also rectangular), the length being from east to west.

477. A large street should be made around it (the village) and this street should be furnished with two footpaths.

478. From the four-plots block (i.e. Brahmā part) in the centre should extend the streets towards the four cardinal points.

479. Four gates should be constructed at the head of these four streets.

480. On each side there should be one large gate, and the smaller gates should be made as said before (i.e. one at each corner).

481. The four smaller streets connecting those (gates) should be constructed according to one's liking.

482. On the large surrounding streets should be built the houses of all castes.

483-485. If in the interior (of this village) an assemblage of the Sudras reside (largely) it is called (lit. built as) Ālaya; if on the other hand there be an assemblage of the Brahmins it is called Padma and if there be an assemblage of the Vaisyas it is called Kolaka.

486. According to some, the houses of all the twice-born may be built in all the four parts (i.e. Brāhma, Daiva, Mānusha and Paiśācha).

487. If the assemblage (of houses) of the Brahmins be situated in the south-east, those of the Kshatriyas (lit. Kings) should be in the south-west.

488. If the assemblage (of houses) of the Vaiśyas be situated in the north-west, those of the Śūdras should be in the north-east.

489. In the Paiśācha part (i.e. fourth round) should also be situated the houses of all workmen.

490. The temples of Vishṇu, Śiva (Rudra) and other gods should be built (in the quarters) as said before.

491. Everything, said or unsaid, should be as prescribed before.

492. Of (i.e. along with all other) villages the Chatur-mukha is thus described by the ancients.

493-495. The residential buildings as stated before should be built in the quarters free from (streets for) conveyances (i.e. congested traffic), if residential buildings be situated in such quarters (of heavy traffic) all prosperity (of the residents) would be ruined; therefore, the architect should avoid this in (all) villages and towns[1].

496-501. Thereafter[2], in case of doubt[3], the disposition of buildings should be in accordance with the custom obtaining in an ancient village; but the (future) expansion of the village should be (always) kept (in mind): this is particularly enjoined in the *Śāstra* (science of architecture); besides in ancient villages gods were installed only on the occasion of a special festival, and open spaces (lit. devoid of houses) used to be left anywhere and everywhere (i.e. without any special object in view), while (now) the disposition of houses (in proper quarters) is (specifically) wanted; in fact in an ancient village a (permanent) temple of a god was not invariably built (as is the practice now-a-days); therefore, in accordance with this criterion, the disposition of houses should be carried out.

502-504. At the time of circumambulation of villages (on the occasion of the first entry into it)[4] the circumambulation should be completely carried out by going round the parts of the Lords of eight quarters proceeding from those of Bhūdhar (i.e. north), Indra

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[1] The fifth object of the chapter as proposed (in line 7), namely, the disposition of buildings, is now carried out (lines 493—501).

[2] That is, whatever has been stated regarding the disposition of buildings in all these eight classes of villages. It should be noted that this matter, though referred to in all cases, has not been completely described; in most cases the disposition of buildings, mainly residential, was left unfinished; here, too, (lines 493—501) only a general principle is laid down.

[3] As to which house should be situated in a particular quarter.

[4] This is the sixth and last object of the chapter as proposed (in line 8): herein, however, the entry into the *house*, not *villag*, is specified.

(Sureśvara, i.e. east) and of others; or in the absence of a (circumambulating) path, by (going round) the neighbourhood of the plots of the Lords of the eight quarters (of the village).

505-506. The offerings to the Lords of quarters should fully be made at (a temple built in) the Brahmā (i.e. central) part (of the village)[1]; one should go and see the deity and then should retire.

507-509. There is no defect if some parts are omitted during the circumambulation; (in fact) the circumambulation of the village should not be by the street reserved for conveyances or the place of sacrificial offerings: all prosperities would be ruined if through ignorance one make a short cut (or pass by a place where four roads meet, during the circumambulation).

510. This is said (i.e. the following supplementary principles are laid down) by the ancients with regard to all kinds of villages.

511-513. The (village) temple of a deity may as well be built in addition to the quarters (already) stated at the head, foot or middle of a street, or in the interspace (of two streets); and as an alternative the residential buildings may also be built in the quarters surrounding it (i e. the temple).

514-515. If through ignorance one demolishes the (already existing) ancient buildings the destruction of the master is inevitable; therefore, an ancient temple should be preserved intact.

516. All the streets including the side ones should conform to the size and shape of the quarters (they pass through .

517-518. The entrance-door of the houses in a village should be (generally) constructed by the south side (of a house), but the door in a house should follow the (following) special rule.

519-522. The length of the house on the side of the street being divided into nine parts, there should be left, both in the interior and exterior (? of the wall), five parts on the right side, and out of the (remaining) four parts there should be left three parts on the left side, and on the remaining (one) part the (entrance) door (of a house) should

[1] This is really the third object of the chapter as proposed in line 6) above.

be constructed, otherwise the (entrance) door may be opened (any where) on the left side of the middle line (drawn through the house).

523-528. The expert architect should apply the arrangement of houses in (i.e. laid down for) all these villages beginning with Daṇḍaka in re-planning (lit. in continuation of) or in remodelling (lit. in) an ancient village; it leads to prosperity if its expansion takes place towards the east and south directions; it is less auspicious if the expansion happens by the south and west directions; the expansion, however, may proceed by all directions, only if the original area be not diminished and the customs of the time and place be kept intact: thus is stated (all) about the ancient village.

529. The region by the two sides of the streets should be furnished with stalls.

530. They (the houses on the streets) may have one to twelve storeys as one likes.

531 Whether high or low, all these edifices should be uniform in height.

532. All the larger houses may have greater height.

533. The houses of the inferior castes should all have only one storey.

534. It would lead to prosperity and be auspicious to have all things (referring to these villages) done as prescribed.

535-536. The master being in an appreciative mood and holding a rewarding hand should make (on the completion of a building) to the chief of the architects the present of a girl together with wealth. jewels, grains, land, house, maids and conveyances.

537-538. If the master refrain from doing this honour (to the chief architect) in order to make a bargain he would sink down as long as the earth and the moon last; therefore, he should give all these (kinds of presents to the architect) as a token of honour; and (thereby) he would (himself) secure all prosperities and success and have all desires fulfilled.

Thus in the *Mānasāra*,, the science of architecture, the ninth chapter, entitled:

The description of villages.

CHAPTER X

THE TOWNS AND FORTS

1-2. I shall (now) describe the characteristic features of the cities of all (classes of) kings beginning with the Astragrâhin, summarising (the details) from the *Tantras* (sciences of architecture).

3-9. The breadth of the city (of the class) of kings called Astragrâhin should, beginning with one hundred rods and increasing by one hundred rods, end (once) at three hundred rods; (secondly) it should begin with two hundred rods and end at four hundred rods; (thirdly) it should begin with three hundred rods and end at five hundred (rods): these are (the three sets) from the smallest to the largest (including the intermediate); and its (breadth) should (finally) be extended so as to end at one thousand and two hundred rods, each (set) being of three varieties and there being (altogether) twenty-one varieties[1].

10-13. Similarly, the breadth of the city of the Prâhâraka (class of kings) should (once) begin with four hundred rods, (secondly) with five hundred rods, (thirdly) with six hundred rods, and increasing by one hundred rods, (finally) end as before (i.e. in twenty-one varieties) at one thousand and two hundred rods.

14-16. The sixty-three (lit. sixty-four less one) varieties of breadth (for the city) of the Pattabhāj (class of) kings beginning with seven hundred, eight hundred, nine hundred rods (and so on),

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[1] In this way: 400—100—600; 500—100—700; 600—100—800; 700—100—900; 800—100—1,000; 900—100—1,100; and 1,000—100—1,200. Thus, there are altogether twenty-one varieties of breadth of the city of this class of kings.

and increasing by one hundred rods, as before; should end at three thousand rods.

17-20. The aforesaid sixty-three (lit. seven times nine) varieties of breadth (of the city) for the Maṇḍaleśa (class of) kings should begin at one thousand and one hundred rods, one thousand and two hundred rods, one thousand and three hundred rods (and so on), and, increasing by one hundred rods, should end at three thousand and one hundred rods.

21-22. The breadth of the city fit for the Pattadhara (class of) kings, Oh wise (architect), should, as before (i. e. beginning at two thousand and six hundred rods and increasing by one hundred rods), end at four thousand and eight hundred rods.

23-24. Similarly, (the breadth) of the city of the Pārshṇika (class of) kings increasing as before (i.e. by one hundred rods, and beginning at three thousand and three hundred rods) should end at five thousand and five hundred rods.

25-26. The sixty-four[1] (less by one) varieties of breadth) for the city of the Narendra (class of) kings should, as before (i.e. beginning at four thousand and four hundred rods and increasing by one hundred rods), end at six thousand and six hundred rods.

27-28. The aforesaid (i e. sixty-three) varieties (of breadth) for the city of the Mahārāja (class of) kings should, as before (i.e. beginning at four thousand and seven hundred rods and increasing by one hundred rods), end at six thousand and nine hundred rods.

29-31. The aforesaid (i.e. sixty-three varieties of) breadth of the city of the Chakravartin (class of) kings, as before (i.e. beginning at five thousand rods and increasing by one hundred rods), should end at seven thousand and two hundred rods; otherwise the (breadth of the)

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[1] Literally, three times four (4×4×4); but following the preceding and succeeding instances, there should be sixty-three varieties, beginning at four thousand and four hundred rods.

biggest city (i.e. of the universal monarch or Chakavartin) may end at ten thousand rods (comprising altogether one hundred and forty-four varieties).

32–35. The length of the city (generally) should be one-and-one-half, one-and-three-fourths, or twice of its breadth; otherwise, in rod measurement by (the similar) increment of rods, it (the length) should be made (up to) twice the breadth.

36. The measurement of the cities (called) Kheṭa and Kharvaṭa, and others should be as stated for that of the villages (of those names).

37. The types and features of all cities and others (i.e. the forts) will now be described.

39–43. The eight kinds of fortified cities are (named) Rājadhānīya (royal)-Nagara, Kevala (ordinary, i.e. without the royal residence)-Nagara, Pura, Nagarī, Kheta, Kharvaṭa, Kubjaka, and Pattana; (and the eight kinds) of forts are (called) Śibira, Vāhinī-mukha, Sthānīya, Droṇaka, Saṁviddha, Kolaka, Nigama and Skandhāvāra. All those (eight) beginning with the *Nagara* may also be called forts, for all practical purposes.

44–47. A city with the king (i.e., royal palace) in the centre and inhabited by numerous wealthy (lit. meritorious) people should preferably be laid out within the kingdom on the banks of a river; it is always given by the learned the name of Rājadhānī (capital or metropolis) if there be (built) a temple of (god) Vishṇu at the entrance or in the centre of it.

48–52. Having four gates towards the four cardinal points and furnished with *Gopuras* (towers), dotted over with guard-houses, equipped everywhere with barracks, full of merchants and encircled with markets, crowded with people and filled with temples of various denominations, inside and out side such a place is called a city proper *(kevala)* by those learned in the *Tantrà* (science of architecture).

52–55 That city is called Pura which is furnished with orchards and gardens, has dwellings of motley population, frequented

by buyers and sellers, agitated by the noise of trading folk, and graced by the assemblage of (temples) of seven gods.

56. The same city with a royal palace inside it, is called a Nagarī.

57-58. That city is called Kheṭa by the ancients, which is situated by the side of a river or a mountain, and is provided with dwellings of the Śūdras (servant class) and with a high wall (lit. fence) around.

59-60. That city is called Kharvaṭa, which has uplands around, is full of dwellings of different castes and abounds in all kinds of pasturage.

61-62. That city is called Kubjaka, which lies between the Kheṭa and Kharvaṭa (cities), has the dwellings of all sorts of people but has no rampart (around it).

63-66. That city is called Pattana (citadel), which is situated in the proximity of waterways, furnished lengthwise with a rampart, contains dwellings of various castes, is always a conglomeration of merchants and centre of exchange for goods like jewels, silk-cloth, camphor, etc., imported from and exported to other countries (lit. islands).

67-69. That fort is called Śibira (camp) by the ancients learned in the *Tantra* (science of architecture), which has armies each ten thousand strong (in soldiers) and engaged in the work of mobilisation at the end of the territory of another king.

70-71. The Senā (or Vāhinī)-mukha (outpost) is that which has many defences and the royal palace, and contains a diverse population.

72-74. The versatile call that fort Sthānīya (strategical site), which is the source of all happiness, has many defences and has always a good king as a resident and his royal palace on a mountain by the side of a river.

75-78. That fortress is called Droṇa (strand, or Rialto) where buying and selling are transacted, which is full of customers on

either side of the city, contains the quarters of merchants and of varied population, and is situated on the right and left banks of a river which is connected with the sea.

79-81. That fortified city is called by the learned Saṁviddha because of the residence therein of the free-holder Brahmins, which is situated near a large village and is itself furnished with a small village.

82. The same (i.e., Saṁviddha) is called Kolaka when it has the palace of a great (Mahārāja class of) king in the centre.

83-84. That (fortress) is called Nigama which is full of the people of the four castes, viz., the twice born and others, and is inhabited by various workmen.

85-87. Skandhāvāra is that which has kingly edifices (of the Kshatriyas), is furnished with gardens terracing from a river and with many residental dwellings on its banks; the same is (also) called Cheri when it has dwellings of the other twice-born (i.e., the Brahmins and the Vaiśyas) on the sides (of the royal palaces).

88-91. I shall describe in order all the forts which bear the real characteristics of a fort, and are built for the protection of a king from the enemy kings, namely, the mountain-fort, the forest-fort, the water-fort, the clay-fort, the chariot-fort, the divine (*Deva*)-fort, and also the mixed-fort.

92-93. The Mountain-fort is of three kinds, namely, as built on the top of a mountain, near (i.e., at the foot of) a mountain and surrounded by (i.e. in the valley of) a mountain.

94-95. The Forest-fort should be that which has water (connection) at the bottom, and the entrance at the top (lit. sky).

95-96. The Water-fort is here described : the fort surrounded by a sea and a river is (called) water-fort (i.e., island-fort).

97-98. That is the Clay-fort which is connected with mountain-caves and is inaccessible to the enemy : the king should build such a fort and live therein (for his security).

99-100. The Chariot-fort is that which is (suited as) a place for detention of thieves, isolated from a village and has all the defects of vast expanse of wilderness around owing to the absence of any trees and water.

101-103. The Divine-fort is that from which it is possible to throw, when the enemies are seen (attacking), stones, etc., towards the exit and entrance, with as much effect as with the deadly (lit. death-like) influence of incantation (*Mantra*) and magic (*Tantra*), and with horrors as that of *Brahma-rākshasa*, *Vetāla*, *Bhūta*, *Preta* and the other evil spirits.

104-105. That fort is known as Miśra (mixed), which is situated in a place mixed (i.e. connected) with various mountains and forests.

106-107. All the forts should be surrounded with a wall and a ditch; they should be furnished with (strong) gates at the places of entrance and exit.

108-109. The (surrounding) rampart (of all these forts) should be built of brick and such other materials (i.e., stone) and should be twelve cubits (i.e. 18 ft.) high, with gangways half-way from the bottom of the wall.

110-114. I will now give an account of the (general) plan of all the cities (including fortified towns): therein the streets should be constructed, running east to west and south to north and numbering, odd or even, from one up to twelve, the increment being by one; all the remaining details of (their) plans, not specified here, should be carried out as stated in the case of the village.

109. Knowing this to be the town-planning he (the architect) should use his discretion (lit. accept or reject certain injunctions) if necessary.

110. Thus is described the town which should be got built accordingly by the architect.

Thus in the *Mānasāra*, the science of architecture, the tenth chapter, entitled :

The town-planning.

CHAPTER XI

THE DIMENSIONS OF BUILDINGS

1. I will (now) elaborate in order the rules regarding the dimensions of storeys in (this) science (of architecture).

2-4. The square, rectangular, circular (round), octagonal, hexagonal, oval (lit. circular with two corners) and so on: these are the various shapes (recommended for the storeys) which increase or decrease (from one to twelve in order).

5. The dimensions of the (afore)said storeys which vary from one to twelve should be (as stated below).

6-12. In the small type of one-storeyed building the five varieties of breadth and length should respectively begin with two and three cubits and end at ten and eleven cubits; in the intermediate type the five varieties should begin with four and five cubits, be increased by two cubits and end at twelve and thirteen cubits; and in the large type the five varieties should begin with, as I say, even and odd numbers, (namely), six and seven cubits and are stated to end at fourteen and fifteen cubits (the increment being as before).

13-19. The height inclusive of the plinth and ending by the pinnacle is stated by the ancients versed in the science (of architecture) to be twice the breadth in the smallest type of (one-storeyed) buildings; in the aforesaid intermediate type of one-storeyed buildings the height is stated to be greater than the breadth by three-fourths; and in the largest type of one-storeyed buildings the height should be greater than the breadth by one-half; as alternatives to these (proportions), in the largest type the height may be greater (than

the breadth) by one-fourth, and in the smallest type the height may be equal to the breadth (in addition) to its being twice (the breadth).

20-23. The (aforesaid) five varieties of height from the largest type (downwards) are (known by) five names : (they are called) Śāntika and Paushṭika in the largest type, Jayada in the intermediate type, and in the small type that (height) which is twice (the breadth) is called Adbhuta; and that height of building, which is equal to (its breadth), in addition to its being twice, is called Sarvakāmika.[1]

24-30. In the smallest type of two-storeyed buildings, the five varieties of dimensions (consisting in the measurement of breadth and length) should begin (respectively) with five and six cubits and be increased by two to thirteen and fourteen cubits ; in the intermediate type (of two-storeyed buildings), the five varieties of dimensions should begin (respectively) with six and seven cubits and being increased by two cubits end at fourteen and fifteen cubits ; and in the largest type of two storeyed buildings the five varieties of dimensions are said by the ancients to begin with seven and eight cubits and end at fifteen and sixteen cubits (the increment being by two cubits).

31-33. Corresponding to the five varieties of dimensions (of breadth and length), the five varieties of heights (known as) Śantika, Paushṭika, Jayada, Sarvakāmika and the fifth, Adbhuta, should be determined in order according to the proportion set forth above.

34-39. (In the smallest type of three-storeyed buildings), the five varieties of dimensions should begin (respectively) with eight and nine cubits, be increased by two cubits and end at sixteen and seventeen cubits ; (in the intermediate type) the five varieties of dimensions should

[1] These proportions are more clearly laid down elsewhere (XXXV. 19—25) ; but therein they are slightly different :

Śāntika (height) = (breadth).
Paushṭika („) = $1\frac{1}{4}$ („).
Jayada („) = $1\frac{1}{2}$ („).
Dhanada (elsewhere called Sarvakāmika) (height) = $1\frac{3}{4}$ (breadth).
Adbhuta (height) = twice (breadth).

begin (respectively) with nine and ten cubits, be increased by two cubits and end at seventeen and eighteen cubits; and (in the largest type) the five varieties of dimensions should begin with ten and eleven cubits and being increased by two each time (end at eighteen and nineteen cubits): these are said to be the three sets (of measures) for the three-storeyed buildings.

40. The (corresponding five varieties of) heights in the smallest, intermediate and largest types respectively (of three-storeyed buildings) should be made as before.

41-44. In the smallest type of four-storeyed buildings, the five varieties of breadth are stated to be nine, eleven, thirteen, fifteen and seventeen cubits, and the five varieties of length, represented by even number of cubits, are ten, twelve, fourteen, sixteen and eighteen cubits; and the heights, as before (i.e. in correspondence with the dimensions) should be twice the breadth (i.e. of the Adbhuta kind)[1]: these are the three sets (of measures).

45-48. Eleven, twelve, thirteen, fourteen, fifteen, sixteen, seventeen, eighteen, nineteen, twenty cubits: of these the odd numbers represent the five varieties of breadth and the even numbers five varieties of length, in the intermediate type of four-storeyed buildings; and the height, corresponding to the dimensions, is in (this type of) four-storeyed buildings said to be what is known as Paushṭika.

49-52. Twelve, thirteen, fourteen, fifteen, sixteen, seventeen, eighteen, nineteen, twenty and twenty-one cubits; twenty-two, twenty-three, twenty-four, twenty-five and twenty-six cubits: these are the (three sets of) five varieties (of breadth, length and height) for the largest type of four-storeyed buildings; the height being of the Śāntika kind[2].

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[1] In this kind the height is twice of the breadth (see note under lines 20—23).

[2] This kind of height is one-and-one-half times the breadth (see note under lines 20—23), hence the absolute measures of height specified here do not satisfy the general proportion indicated by the Śāntika height.

53-55. For the smallest type of five-storeyed buildings the five varieties (of breadth, length and height) should begin with eleven cubits, be increased by one cubit and end at twenty-five cubits, the height being (known as) Jayada[1]: these are the three sets (of measures).

56-58. Similarly for the intermediate type of five-storeyed buildings the (three sets of) five varieties (of breadth, length and height) should begin with twelve cubits, and, being increased as before by one cubit, should end at twenty-six cubits, the height being (known as) Paushṭika[2].

59-61 For the largest type of five-storeyed buildings the (two sets of five varieties of) dimensions (i.e. breadth and length) should begin with thirteen cubits and (being increased by one cubit) end at twenty-two cubits[3]; in this instance the height should be either of Śāntika or of the Paushtika proportion.

62-64. For the smallest type of six-storeyed buildings the (two sets) of five varieties of dimensions (of breadth and length) are stated to begin with fourteen cubits and increasing by one cubit end at twenty-three cubits; and the height is stated to be either of the Sarvakāmika kind or twice the breadth (i.e. of the Adhbuta kind).

65-67. For the intermediate type of six-storeyed buildings the (two sets) of five varieties of dimensions (of breadth and length) are stated to begin with fifteen cubits and increasing by one cubit end at

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[1] As in the case of the large type of four-storeyed building (see lines 49—52) the dimensions are:—

Breadth—11, 13, 15, 17, 19.
Length—12, 14, 16, 18, 20.
Height—21, 22, 23, 24, 25.

[2] That is, breadth—12, 14, 16, 18, 20.
length —13, 15, 17, 19, 21.
height —22, 23, 24, 25, 26.

[3] That is, breadth—13, 15, 17, 19, 21.
length —14, 16, 18, 20, 22.

twenty-four cubits; and the height is stated to be of the Jayada proportion.

68-71. For the largest type of six-storeyed buildings the (two-sets) of five varieties of dimensions (of breadth and length) are stated to begin with sixteen cubits and increasing by one cubit extend up to twenty-five cubits; and the height should be of the Śāntika proportion. but as an alternative the expert architect may make the height of the Paushṭika proportion.

72-77. From seventeen cubits up to twenty-six cubits, the increment being as before (i.e. by one); from eighteen cubits up to twenty-seven cubits, the increment being as before; and from nineteen cubits up to twenty-eight cubits; these are said to be respectively the smallest, the intermediate and the largest types of five varieties of dimensions (of breadth and length) in the seven-storeyed buildings; and the heights, Śāntika, Paushṭika, Jayada, Adbhūta and Sarvakāmika, should correspond respectively to the largest and other (i.e. the intermediate and the smallest) types of dimensions.

78-82. From twenty-nine cubit up to thirty-three cubits, from thirty up to thirty-four cubits, and from thirty-one up to thirty-five cubits; these are said to be the three types, the smallest, etc., of five varieties of dimensions (of breadth and length), and to this (type of) eight-storeyed buildings the (corresponding) Śāntika and other heights should be given as before.

83-87. From thirty-two to thirty-six cubits; from thirty-three cubits to thirty-seven cubits, the increment being as before, and from thirty-four to thirty-eight cubits, the increment being by one cubit; these are said to be the three types, from the smallest to the largest, of five varieties of dimensions (breadth and length) in the nine-storeyed buildings; and the (corresponding) heights are said to be the aforesaid five, the Śāntika and others.

88-92. From thirty-three to forty-two cubits; from thirty-four to forty-three cubits; and from thirty-five to forty-four cubits: these

are said to be (the three sets in) the fifteen varieties of dimensions (of breadth and of length) (consisting of five varieties for each of the three types), from the smallest to the largest in the ten-storeyed buildings; and the corresponding heights are said to be the Śāntika and others.

93-97. From thirty-four up to forty-three cubits; from thirty-five up to forty-four cubits, and from thirty-six up to forty-five cubits: these are said to be (the three sets in) the fifteen varieties of dimensions (of breadth and length), consisting of the smallest etc., in the eleven-storeyed buildings; and the five kinds of heights, from the plinth to the pinnacle, should be as before.

98-102. From thirty-five to forty-four cubits; from thirty-six up to forty-five cubits; and from thirty-seven to forty-six cubits: these are said to be (the three sets in) the fifteen varieties of dimensions (of breadth and length); and the corresponding five heights should be as before; the learned architect should thus construct (i.e. measure) the twelve-storeyed buildings of the smallest, the intermediate and the largest types.

103-104. This (height as given above) is stated to be for the Jāti class of buildings (only), for the Chhanda and the other classes, namely, Saṁkalpa and Ābhāsa, the Śāntika (and other heights) should be respectively three-fourths, one-half (cubit) and one-fourth (of those for the Jāti class).

105-106. The architect learned in the rules of the *Tantra* (science of architecture) should build edifices (of the Jāti, Chhanda, Saṁkalpa, and Ābhāsa classes) taking into consideration the three kinds of measures (also), namely, the smallest, the intermediate, and the largest types respectively, which are ascertained in accordance with the aforesaid proportions (lit. by the number of cubits, as increased in the several types).

107-112. The aforesaid (five kinds of) heights are described (here) in order as before: (i.e. the five kinds where) the height is twice (the breadth), greater by one-fourth, and greater by one-half (should

remain as before); in the alternative the height may be greater (than the breadth) by three-fourths in the five proportions, namely, the Śāntika and others, but in case of the Paushṭika (proportion) the height may be greater (than the breadth) by three-eighths or two-thirds; all the (five kinds of) these heights are thus stated in the Jāti (class of) buildings.

113. These heights are used for halls (*śālās*) and gate-houses (*gopuras*) belonging to the palaces of Kings and the temples of Gods.

114. The five kinds of height beginning with Śāntika are determined by comparing them separately with the breadth.

115-116. The master (of the building) will die if the reverse of this be done; therefore, the heights of buildings (as laid down) should not be ignored by architects in accordance with (i.e., following) the rules (*tantra*).

117. The heights of all kinds of residential buildings are (also) described (here).

118-121. The heights of all (classes of) gate-houses (*gopuras*)[1] are taken (from the plinth)[2] up to the head or the apex (i.e. the finial), but in case of the Dvāra-śālā (class of gate houses) (which is erected) for the second (court) the suitable height may extend to the extreme end (of the building proper) or up to the finial, and in case of the Dvāra-śobhā (class of gate-houses, which is erected for the first court) the suitable height should extend up to the *uttara* (of the entablature)[3]: these are the śāntika and Paushṭika (which are applied to the largest type of) heights suitable for the gate-houses, (the others being as stated before).

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[1] Dvāra-śobhā (for the first court), Dvāra-śāla (for the second), Dvāra-prāsāda (for the third), Dvāra-harmya (for the fourth court) and Mahāgopura (for the last court) (see Chap. XXXIII).

[2] See lines 13—19.

[3] Uttara is the lowest division of the entablature (see the writer's *Dictionary* under Uttara).

122-126. Otherwise (i.e. finally) the dimensions of all the storeys in comparison with the measure (i.e. the area) of the (whole) edifice are now specified in order: the dimensions (of length and breadth) in the three types, namely, the smallest and others (i.e. the intermediate and the largest, for each of the twelve storeys) should begin (respectively) with six and five cubits and increasing (respectively) by two and three cubits end (respectively) at ninety-three and ninty-four (cubits): these dimensions should cover the twelve storeys, from the plinth to the apex of the dome; similarly the measures (lit. cubit) of the five proportions of height, namely, the Sāntika and the others (i.e. Paushṭika, Jayada, Sarva-kāmika and Adbhuta) is stated to extend from the plinth up to the apex of the dome.

127. There should be one to two storeys in the palace of the Kalpa-grāma (i.e. Astra-grāhin class of) kings.

128. The palace of the Prāhāraka (class of) kings is stated to have one to three stor eys.

129. The palace of the Paṭṭabhāj (class of) kings is stated to possess one to four storeys[1].

130. The palace of the Narendra (otherwise called Mahendra, class of) kings is stated to have three to eight storeys.

131. The palace of the Mahārāja (otherwise called Adhirāja, class of) kings is stated to have three to nine storeys.

132. The palace of the Chakravartin (class of) kings should be of five to twelve storeys.

133. The palace of the Crown Prince is stated to be of one to three storeys.

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[1] Similarly the Maṇḍaleśa class of kings should have one to five-storeyed palaces, the Paṭṭadhara class one to six-storeyed palaces and the Pārshṇika class one to seven-storeyed palaces: these are apparently missing if not implied in lines 134—135 or 140-141.

134-135. The palaces of those (i.e. the feudatory kings) beginning with Sāmanta should be of one to three storeys, and those of all (other) petty kings should be of one to three storeys.

136-137. The buildings of the (following) five (classes of people, namely), the Sthapati (architect), the Sthāpaka (builder), the Gabhastika (army masters, military officers), the Yūthaka (leaders, chiefs), and the twice born (in general), may possess one, two or three storeys.

138. The buildings of the base-born (*Ugrajāti*) also may possess one, two or three storeys.

139. The stables for elephants and for horses should be most fittingly made of one storey.

140-141. The temples of all gods and the palaces of the kings of all other castes are said to possess one to the last (i.e. twelve) storeys and one to nine-storeys (respectively).

142-143. The small (residential) buildings are thus described: they are made of small measure on account of their small size; and all the small temples like the aforesaid (small) residential buildings are stated to be built similarly (i.e. with small number of storeys).

144. The (isolated) pavilion (i. e. temple) should be made of nine storeys, in the alternative the (i.e. such) temple (when built) in the central theatre-like quadrangle may be of larger size (i.e. with more than nine storeys) than the isolated pavilion.

145. These dimensions of storeys have been (thus) described by all the ancients versed in the *Tantra* (science of architecture).

Thus in the *Mānasāra*, the science of architecture, the eleventh chapter, entitled:

The description of the dimensions of storeys.

CHAPTER XII

THE FOUNDATION

1-3. Herein is described the foundation of the temples of gods and (the dwellings) of the twice-born and others, and of all other buildings and villages, etc.

3-5. The foundation is auspicious in all respects when it is completely filled with various things but the foundation is unprosperous and inauspicious when (it is filled) with a lesser number of things; the foundation should, therefore, be perfectly laid as stated (below).

6-8. The depth of the excavation (lit. foundation-cave) should be as high as the basement of the building; the four sides (lit. corners or walls) made of brick or stone should be equal; from its bottom should be removed water (if there comes out any), and all (kinds of) earth should be deposited therein.

9-12. The floor of the excavation should be consolidated with seven kinds of earth, namely, from rivers, and mountains, from ant-hills, crab-holes, sea-shores, from tops of trees (? hills), and from near a cow-shed (lit. from the foreparts of cows' hoofs).

13-15. Upon this (earth deposit) should be (further) deposited the root of the (white) lotus at the central part (of the excavation), to the east the root of the blue lotus, to the south the root of water-lily, to the west *saugandhi* (grass), and to the north the *kākali* (gunja) plant.

16-20. Upon this should be placed, in order, the (following) eight sorts of corn: *śāli* (corn) should be placed to the north-east and *vrīhi* (grains) to the east, *kodrava* (Paspalum scorbiculatum) to the south-east, *kaṅgu* (Panic seed) to the south, *mudga* (phaseolus mungo)

to the south-west, *māsha* (bean, phaseolusradiatus) to the west, *kulattha* (dolichos uniflorus) to the north-west and *tila* (sesamum indicum) to the north.

21. Upon this (finally) depositing (the other usual materials e.g. concrete) the foundation should be raised up to the (upper) surface of the excavation.

22-23. As regards the measurement and the shape it (the foundation) should be in conformity with buildings of one to twelve storeys.

24-25. The twelve varieties of dimensions (of breadth and length) should begin respectively with three and four parts (*mātras*, i.e. *aṅgulas*) and end at twenty-five and twenty-six, the increment being by two[1]

26-28. The depth of the excavation should be equal to its breadth and less by one-eighth or one-fifth, or similarly less by one-fourth.

28. All these (measures) are stated to be (taken) in *rods* (of four cubits).

29-30. The breadth of the excavation should be equal to the width of the (main) pillar of the building, or it may be made less by one-eighth, or be three-fourths of the breadth.

31-33. The depth (of the excavation) should be made as aforesaid; the width of (its) wall is stated here : the width of all the (four) walls should be one, two, or three parts out of the three parts into which the depth is divided.

34-35. The depth of the excavation being divided into four parts one part is given to its base, two parts to its pillar and one part to the entablature.

36. It (the excavation) should be shaped like a three-fold square pavilion at its entrance into the watery part (i.e. the bottom)[2].

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[1] These measures seem to be in rods of four cubits or two yards (see line 28); if it be taken literally to imply the aṅgula of ¾ inch, the dimensions would be too small for the foundation of any building.

[2] See lines 6—8.

37. It (the roof of the excavation) should be divided into (plans of) twenty-five (i.e. Upapīṭha) or eighty-one (i.e. Paramaśāyika) plots.

38. The height of the wall of these plots is one part and the thickness should be as aforesaid (i.e. one part).

39. In the Upapīṭha plan (of twenty-five plots) the deities should be assigned in the order as stated before[1].

40-41. Thereafter, on a forenoon, the preliminary purification *adhivāsana*) ceremonies should be performed and he (the priest) should worship (the Spirit of the house) with perfumes, unhusked rice, flowers, burning of incense and lamp.

42. (Thereafter) a joint offering of all things (*sakalīkaraṇa*)[2] should be made and then benediction (lit. auspicious day) should be pronounced.

43. Thereafter the stationary structure should be reached at its entablature by way of the (twenty-five) plots (into which the roof is divided).

44. The *Mantra* (incantation, should be) ' Oh,' Vāstu (the Spirit of the house) let the foundation grow, I bow to Thee'.

45-46. Brahmā and other Vāstu (house) deities who are addressed with (the mystic syllable) *Om* at the beginning and bid good-bye with *Namaḥ* at the end should be worshipped with their own *mantras* (incantations).

47. The wise architect should wash the excavation with the five products of the cow (*pañcha-gavya*).

48-49. Upon this a pot filled up with perfumed water and covered with strings should be placed.

50-51. Around this (main pot) should be placed twenty-five (other) pots filled with water, and covered with strings, cloths, and bunches of leaves.

52-53. The architect should put on his best clothes and outer garment, and worship the Lord of the Universe with perfumes and flowers, and then meditate on Him.

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[1] See the chapter VII (lines 69—70)

[2] See details on 60, note 1.

54. At its (i.e. Upapīṭha plan) right side the Sthandila figure[1] should be marked with unhusked rice.

55. The ordinary offerings should be made to Brahmā and other deities.

56-60. Towards the east and north on the occasion of building a house should be offered as sacrifice to the fire, the *samid* plant, clarified butter, sesame seed and boiled rice each twenty-five times, to Brahmā, Ārya, Vivasvat, Mitra and Bhūdhara deities, with proper incantation and mentioning their names amidst the uttering of Vedic hymns and (other) auspicious sounds.

61-64. Thereafter the Sthaṇḍila figure (of forty-nine plots) should be marked preferably with *śāli* (corn) and unhusked rice, or the Maṇḍūka or the Parama-śāyika figure (i.e. of sixty-four or eighty-one plots) should be marked with unhusked rice; a bed of *kuśa* grass should be made thereon by spreading the same grass; and the wise (architect) should (also) mark the figure named Sakala[2] and spread over it water and flowers.

65-69. After the conclusion of the sacrifice to the fire with the mystic words[3], the chief architect should leave the place of sacrifice, and put on (his forehead) a mark (known as *tilaka*) with (the ashes of) corn (*śāli*); thereafter (he should go) towards the north of the village, only drink milk and water at night and go (thereon) to bed (for rest) when (his assistants) Sūtragrāhi, Takshaka and Vardhaki should remain awake and, with various things, serve the chief architect lying in bed.

70-78. Thereafter (i.e. at day-break) when the chief architect has finished bathing or washing he should put on his best garments and being accompanied by the Brahmins who keep on pronouncing the Vedic hymns should go round (the place) and then make a joint offering of all things (*sakalīkaraṇa*)[4] on an auspicious moment and conjunction offering as aforesaid (all the things) from (i.e. collected in)

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[1] See chapter VII.

[2] For the details of these figures see chapter VII.

[3] Om bhuḥ, om bhuvaḥ, om svaḥ, etc.

[4] See page 60 note 1.

the vessel amidst auspicious sounds.. (The figures known as) *Svast* (mystic cross), *Vrishabha* (sacred bull), *Lakshmi* (goddess of wealth) and *Darpaṇa* (auspicious mirror) should be made : *Svasti* is made with gold, *Vrishabha* with iron, *Lakshmī* with copper and *Darpaṇa* with silver ; the *Svastika* figure is marked in the east (Indra part), arranging the four (figures) in order.

79. *Jāti-hiṅgūla* (vermilion) should be deposited in the Jayanta plot (marked on the roof of the excavation).

80. *Haritāla* (yellow orpiment columba Harriyala) is deposited in the Bhṛiśa plot and *Manah-śilā* (red arsenic) in the Vitatha plot.

81. In the Bhṛiṅgarāja plot *mākshi* (a honey-like mineral) should be deposited.

82. *Rājāvarta* (? a mineral) should be deposited in the Sugrīva plot.

83. In the Śosha plot is deposited *gairika* (red chalk) and in the Mukhya plot *añjana* (collyrium).

84. *Gandhaka* (sulpher Hyperasethera Moringa) is deposited in the Aditi plot and *Padma-rāga* (ruby) in the middle (i.e. central Brahmā plot).

85. Thereafter *Pravāla* (coral) is deposited in the Ārya plot, and *Pushparāga* (topaz) in the plot of Sāvitra (and Savitra).[1]

86. *Vaidūrya* (cat's eye gem) is deposited in the Vivasvat plot and *Vajra* (diamond) in the plot of Indra (and Indrarāja).[1]

87-88. *Indranila* (sapphire) is deposited in the Mitra plot, *Mahānīla* (verbesina scandens) in the plot of Rudra (and Rudrarāja)[1] and *Marakata* (emerald) in the Bhūdara plot.

89. *Muktā* (pearl) should be deposited in order in the plots of Apavatsya (and Āpavatsa).[1]

[1] Each of these quarters is shared generally by two deities; Sāvitra, Indra, Rudra, and Apavatsya also include their partner deities: this fact is made plain by the use of plot (koshṭha) in the plural in line 89. The restoration of these four partner deities is necessitated by the fact that as in the ground plans (see note under chap. VII, 154) so also in this foundation too, the whole ground is divided into plots (of the Upapīṭha and the Parama-śāyika plans) designated by forty-five deities assigned to them : and to make up the number forty-five the inclusion of these four deities is necessary.

90-91. *Vishṇu-chakra* (disc of Vishṇu) is deposited in the Iśa plot and *Triśula* (trident of Śiva) in the east *Śrīdevī* is deposited in the Agni plot and *Śrayanta* in the Yama plot.[1]

92. *Dūrvā* (Panicum dactylon) is deposited in the Nair-ṛiti plot (south-west) and *Bhṛiṅgī* (Indian fig tree) in the Varuṇa plot (west).

93. *Apamārga* (Achyranthes Aspera) is deposited in the Vāyu plot (north-west), and one-leaf-lotus in the north.

94. Then should be deposited the eight herbs in order in the (eight) plots (of eight deities) beginning with Mahendra[2].

95. Sandal (sirium myrtifolium) should be deposited in the Par-janya plot and *aguru* (aquilaria agallocha) in the Antariksha plot.

96. Camphor should be deposited in the plot of Pūshan and *śaila* (bitumen) in the Mṛiśa plot.

97. Lavaṅga (cloves) should be deposited in the Dauvārika plot and *Elā* creeper (cardamom plant) should be deposited in the Roga plot.

98. *Jātiphala* (nut meg) should be deposited in the Nāga plot and *Kolaka* (Black pepper alangium hexapetalum) in the Udita plot.

99-102. *Kapāla* (skull), *triśula* (trident), *khaṭvāṅga* (part of a bedstead), *paraśu* (axe), *Vṛishabha* (bull), *pināka* (bow or staff), *hariṇa* (antilope) and *śārṅga* (horn): the figures of these eight objects

[1] The trident of Śiva should be better suited to the quarter of Īśa (Śiva) and the disc of Vishnu to the quarter of Indra (see lines 155—156); on this analogy Srīdevī is apparently meant to be an attribute of Agni, but usually Svāhā is associated as consort; similarly Śrayanta seems to be an attribute of Yama, but the club is his well known attribute and Yamī his consort (see lines 99—102, 75—78).

[2] That is, Mahendra, Satyaka, Gṛiha-kshata, Gandarva, Pushpa-danta, Asura, Bhallāṭa and Mṛiga (see note under line 85, and plates under chapter VII); besides, the eight herbs mentioned in the first part of the line must be deposited in the eight quarters intended to be implied in the second part, because herbs are referred to neither in the preceding lines (92 and 93) nor in the succeeding lines (95 to 98).

should be marked in their own colours in the (eight) plots of Indra (east) and others (i.e., south-east, south, south-west, west, north-west, north and north-east respectively).

103-104. The (floor of the) excavation should be covered (with these figures) in accordance with the rule: (otherwise) there would be unsuccess; therefore, the floor (should be finally covered) with copper.

104-107. The wise architect clad in his best garment and accompanied by the preceptor should circumambulate the excavation and place thereupon water pots and jars and bathe it with water therefrom amidst the chanting of Vedic hymns and all auspicious sounds.

108-109. That whole excavation should be meditated upon as being supported by the (eight) mountains and (the eight quarter lords, namely) Vivasvat (and others), and connected with the earth and the seas, and placed upon the great serpent (Ananta Vāsuki)[1]

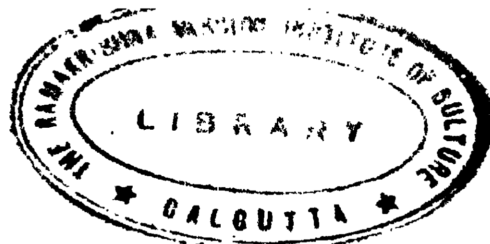
110-111. He (the architect) should particularly worship the eight (? seven) mountains, the great serpent, and the eight quarter-lords in order, all the names being separately mentioned with their respective incantations (*mantras*).

112-114. The Creator, Viśvakarman (i.e. Rudra or Siva),[2] should be worshipped otherwise by reciting His description (*dhyāna*); He is the Lord of the universe, and the cause of creation, preservation and destruction; He should be worshipped mainly with perfumes, flowers, incense and dishes (*naividya*) and other things.

115-119. (For the purpose of making the image of this deity) a bolt should be made with essential wood or stone, (underneath)

[1] According to the mythological account the earth is stated to be held by the great serpent, great mountains and great seas, and protected by the quarter-masters.

[2] That this deity is not Brahmā but Śiva is clear partly from his description as contained in line 120, and partly from the assertion (in line 134) that the whole description (lines 112—133) refers to the foundation of the Śiva-temple.



a *svastika* (mystic cross) figure (should be made) of which the breadth should be three, four or five *aṅgulas*, and the length twice this; its bottom should be square but the top circular; the height of the image made of iron should be two or three *aṅgulas*.

120-121. The image should be in the erect or sitting posture, be adorned with clotted hair and diadem, and be furnished with three eyes and four hands (the two) being in the boon-giving and refuge-offering poses, and (the other two) holding the *kṛishṇā* (antelope) and the *paraśu* (axe).

122-125. The board (on which the image is made) should be (in length) equal to, one-and-a-half times or twice the length of the post which is made square in shape (lit. of four equal angles) with essential wood or stone; this board is placed upon the excavation and on it (board) is fixed the bolt; and around this (bolt) the wise architect should carve the image.

126-127. It (the image) should be decorated with flowers and cloths when it has strongly been fixed upon all sides by means of a thousand bricks and the (aforesaid eight) herbs.

128-131. The foundations of buildings (a part from those of villages and towns) should be laid by the wise (architect) just at the bottom of the wall-pillars and house-pillars, or (a little away from it) towards the right side, or extending about the region of the bottom of the pillar or of the plinth, or at the fore or neck part of the base (*kumuda*),[1] or extending (far away) up to the boundary wall.

132. If the depth (of the foundation) be otherwise than (what has been prescribed) it (the foundation) would be a source of all dangers.

133. Such should be the foundation for the temple of Śiva; other foundations are described here.

134-139. In the floor of the excavation of the Vishṇu-temple the attribute of Śiva should not be made, but (in its place) the attributes of

[1] *Kumuda* is a large convex moulding used principally in the bases of columns (see the writer's *Dictionary*, page 141)

Vishṇu along with the aforesaid materials should be set up in the centre (of the floor) the disc (of Vishṇu) made of gold should be marked, and to the left (of it) (should be marked) His conch made of silver, to the north-west His bow made of copper, to the right His sword made of thin lead plate (lit. creeper) and to the east the image of (His riding animal) Garuḍa.

140. Such should be the foundation of the Vishṇu (temple), the foundation of the Brahmā (temple) is described here.

141-147. The foundation of the Brahmā temple : in this foundation the various things (as aforesaid) should in particular be deposited in the central portion (of the floor of the excavation); when the foundation of (the temple of) Brahmā is laid His attributes should be set up (as before) : the *Om* figure (प्रोम्) should be marked on the central plot with gold; upon the *Om* figure the sacred thread made of gold should be placed ; the *Svastika* (mystic cross) and other figures made (also) of gold should be marked on the four cardinal points ; thereon should also be marked His water-pot made of copper ; and on the left should be marked His rosary made of copper and His black antelope made (of copper).

148. Thus is described the foundation of (the temple of) Brahmā, therein should be (cast) the image representing His own self.

149-151. In the (foundations of the) temples of all other Gods and Goddesses their own images made of gold or iron should be set up, and all the aforesaid things being deposited (as before) these foundations should be laid.

152. The foundations of the residential buildings : the foundations of temples have been thus described, the foundations of the residential buildings are stated here.

153-154. The foundations of the houses for the twice-born and the other (lower) castes (are described) in order : all the materials as before and also those attributes should be set up (in these foundations too).

155-157. The disc (of Vishṇu), the water-pot (of Brahmā), the staff (of Śiva) and the sacred thread, (all) made of gold, should be fixed on the four cardinal points (beginning with the east) ; and the mystic figure Om ( ) (also) made of gold should be in the centre : such should be the foundations of (the houses for) the Brahmins.

157-159. (The foundation of the houses) for the Kshatriyas (lit. Kings) are now described : the elephant, the sword, the umbrella, the chowries : these four (attributes), all made of gold, should be fixed on the four cardinal points.

160-161. The balance made of gold is fixed on the central plot : such should be the foundations of the houses for the Vaiśyas : what is not specified here being in accordance with the practice of the science (of architecture).

162. The plough and yoke made (also) of gold should be fixed in the central plot of (the excavations of) the Śūdras

163-165. On the floor of the excavation are stated to be marked the images of Brahmā in case of the Brahmins (lit. twice-born), of Indra in case of the Kshatriyas (lit. Kings), of Kubera (god of wealth) in case of the Vaiśyas, and of man in case of the Śūdras.

166. Thus are described the foundations of houses (i.e. temples and residential buildings) ; the foundations of villages (and towns) will be described here (below).

167-170. The foundations of the villages (and towns) : under this (heading) is described the situation of the foundations of all villages, towns, Pura (city), Pattana (sea side commercial city), Kharvaṭa (fortress), Koshṭa (granary) and Kola (fortified city),[1] etc. : the excavation may be made in the interior of the stationary or moving (?) part of villages, or at the junction of the village gate.

171-172. The width of the excavation should be as deep as the joint palm of man, (wherein) should be deposited the aforesaid earth, roots, water and corn, etc. (as before).

[1] For details see chapter X, 39 foll.

173-174. This extension of the excavation should be of five kinds, as it begins with five *aṅgulas* (of three-fourths inch each) and ends at thirteen *aṅgulas*, the increment being by two *aṅgulas*.

175-176. There (i.e. on the floor of the excavation) should be made (the plan of) twenty-five plots (i.e. Upapītha) or eighty-one plots (i.e. Paramaśāyika); the rest should be made as before and the materials, etc., also should be deposted as before.

177-181. In the east should be marked the figure of the royal elephant made of silver and in the south-east the figure of sheep made of iron, in the south should be the male buffalo made of earth, and human figure made of sand should be marked on the south-west, the hippopotamus made of silver is marked on the west and an antelope made of iron on the north-west, the mythical elephant (of Indra) made of silver on the north and the bull made of silver should be marked on the north-east: thus (the mystic figures) being made (the excavation should be filled) with the aforesaid things (as in case of the foundation of houses).

182. The village foundation is thus stated, the water-foundation will be described here (below).

183. The water-foundation: (the width of) the foundation of tanks, wells and ponds is said to be, in the central part, as deep as the human palm.

184-186. (In these foundations) the figures of frog, conch-shell, fish and tortoise, made of silver, should be marked respectively on the four cardinal points beginning with the east, and at the centre should be the figure of a crab made of gold, and the rest should be made as aforesaid.

1871-88. I shall (now) describe the construction of buildings of one to twelve storeys which are made of bricks; first (I shall give) the description of bricks.

189-193. The breadth of the brick begins with seven *aṅgulas* (i.e. five-and-a-quarter inches) and ends with twenty-nine or thirty *aṅgulas* (i.e. twenty-two-and-a-half inches), the increment being by two *aṅgulas*; the length of the brick is desired to be greater by one-fourth, one-half, three-fourths, or by its own dimension (i.e. twice); and the thickness (of the brick) should be made half or equal to its breadth, and it should be quadrangular in shape.

194-195. When the brick is made of stone it is called stony brick and when made of brick it is called (simply) brick; the stony bricks and the pure brick both (varieties) are distinguished as male, female and neuter.

196-200. On an auspicious moment the first brick should be laid in the excavation towards the region of the east, or (any of the) five (directions) namely, east, north-east, south-west, north-west or south: thus (should be laid the first brick) in all buildings, but especially in case of (the excavation of) the temple of Śiva (it should be laid) either in the aforesaid quarters or in the centre.

201-202. The first brick should be laid (more particularly) at the end of the plinth, or the boundary[1], or at the fore or neck part of the base (of the column),[2] or at the end of the fillet of the base (*paṭṭikā*).[3]

203. As before the herbs and roots should be deposited (when the excavation is filled) with bricks.

204. In case of residential buildings the first brick should be laid in accordance with one's own desirable (i.e. customary) rules.

205-207. It is stated that the figures of (the following) letters should be marked in order (namely) of sibilant Ś (श) on the eastern

[1] Prānta is referred to as prākāra in line 130.

[2] See note under lines 128–131.

[3] This refers to an upper moulding of the base (see the writer's *Dictionary*, page 330).

brick, of palatal Ṣ (ष) on the southern brick, of dental S (स) on the western brick, of the letter H (ह) on the northern brick, and of the mystic sign Om (ओं) on the central brick.

208-209. The eastern brick should extend towards the south, the southern brick towards the west, the western brick towards the north, and the northern brick towards the east.

210-211. The wise (architect) should lay at the centre the herbs and the roots as stated before; both the chief architect and the master should do this work by turn.

212-213. The chief architect should distinguish the (two varieties of bricks, namely) stony brick and pure brick and their three genders, and should fix the male bricks in the temples of male deities.

214. The excavation should be made at night and the bricks shoud be laid in the day time.

215. The foundations of houses should project towards the interior and that of villages towards the exterior.[1]

216. The rules for laying the foundations as well as for laying the first brick are thus fully described.

217. If there be any thing not specified here, that should be carried out in accordance with the customs stated to pertain to one's family.

Thus in the *Mānasāra*, the science of architecture, the twelfth chapter, entitled:

The laying of foundations.

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[1] Mayamata is not different on this point (XII-97):

अभ्यन्तरमुखं गर्भं वस्तुमध्यं बहिर्मुखम् ।

CHAPTER XIII

THE PEDESTALS OF COLUMNS

1. I will now give briefly an account of the pedestals for columns in this science (of architecture).[1]

2. The pedestal is attached to the base which (latter) is situated on the upper part.[2]

3-7. The height of this base (i.e., the one attached to the pedestal) is divided into four parts; of these the first part from the plinth to the upper band (or fillet) is divided beginning from one, and increasing by one and ending at eight parts: this should be the height of the pedestal, (which is) stated to be of nine varieties, or it may be of twelve varieties when it (its height) extends gradually to the middle portion (i.e. up to the two parts out of the four into which the height of the base is divided).[3]

8-10. In the case of the small type of buildings the height (of the base) being divided into four equal parts, two parts, three parts, or even

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[1] The Pedestal is the lowest division in a column, also called stylobates and stereobates, consisting of three principal parts, namely, the die, the cornice, and the base (see the writer's *Dictionary*, page 86). It is employed for support, heightening the column, and increasing the beauty as stated in the *Mayamata* (XIII. 1):—

रक्षार्थमुन्नतार्थं च शोभार्थं तत् प्रवक्ष्यते ।

[2] The situation of the pedestal is more clearly stated in the *Mayamata* (XIII, 1): it should be placed underneath the base:—

अधिष्ठानस्य चाधस्तादुपपीठं प्रयोजयेत् ।

[3] That is, when the height of the pedestal is one-fourth of the height of the base it is again divided into nine varieties; and when the former is half of the latter, it is divided into twelve varieties.

(all the) four parts may be the height (of the pedestal), and (thus) it (the height of pedestal) should be of fifteen kinds, comprising five types, namely, *Santika* and others (i.e. *Paushṭika, Jayada, Adbhūta*, and *Sarva-kamika*).

11-13. As an alternative, in the case of the intermediate type of buildings, the five varieties of height (of the pedestal), (beginning with) *Śāntika* and ending with *Sarva-kāmika*, are stated to be two-parts, three parts, four parts, five parts, and up to six parts.

14-16. As an alternative, in the case of the large type of buildings the five varieties of height (of the pedestal), (represented) by five (proportions) beginning with *Śāntika*, are stated to be three parts, four parts, five parts, six parts, and up to seven parts.

17-20. The projection of the pedestal belonging to the column of the main building should extend outwards from the plinth of the wall, and be equal to the height of the small type, or greater by one-fourth, one-half, three-fourths, or twice (of it) in particular.

20-26. It (the projection) is stated in proportionate measure (also): it (the height of the pedestal) should be divided into seven, eight, nine, ten, eleven, twelve, thirteen, fourteen, or fifteen (equal parts) in particular; of these parts one, two, three, four, five, six, seven, or eight parts are stated, as before, to be the projection (of the pedestal); but whichever (gives) beautiful proportion (should be selected).

27-29. As an alternative, this projection (of the pedestal) is (also) stated in cubit measure: the nine varieties of projection begin from one cubit and, increasing by one-fourth cubit, end at three cubits.

30-34. As an alternative, the projection (of the pedestal is stated also) in the *daṇḍa* (rod of two yards) measure: the projection of the pedestal extending outwards from the column may be one, one-and-one-half, two, two-and-half, three, three-and-half, four, five, six, seven, eight, or nine *daṇḍa* (rods)

35. Thus is specified the projection (of the pedestal); the proportionate measure (of its component mouldings) will be stated here (below).

FOUR KINDS OF VEDI-BHADRA

36-52. Of the twenty-four parts of the height (of the pedestal) five parts are said to be the plinth (*upāna*); the fillet (*kampa*) is said to be of one part, and the dado (*grīva*) of twelve parts; the fillet (*kampa*) should be one part, the fillet (*vājana*) four parts, and the fillet (*kampa*) one part; this is stated to be the (one variety of) *Vedi-Bhadra*. As an alternative, of the twelve parts, the plinth (*janman*) should be made of two parts, the cyma (*padmā*), of one part and the fillet (*kampa*) of half a part; the dado (*kaṇṭha*) should be of five parts, the corona (*kshepaṇa*) of half a part and the cyma (*padma*) of one part; the height of the fillet (*paṭṭikā*) should be made of one-and-a-half parts, and the fillet (*kampa*) of half of a part. Or of the same measurement (i e. twelve parts), one-and-a-half parts should be the height of the plinth (*pāduka*); above that the cyma (*abja*) should be of the same height, and the fillet (*kampa*) should be made of half a part; the dado (*grīva*) should be of five-and-a-half parts, and the corona (*kshepaṇa*) of half a part; above that the cyma (*padmā*) should be of one part, and the fillet (*vājana*) of one part; and above that the fillet (*kampa*) should be made of one-and-a-half parts by the wise (architect). (Again) of the same (twelve) parts, the plinth (*upāna*) and the cyma (*ambuja*) should otherwise be together of two parts; the fillet (*kampa*) should be half a part, the ear (*karṇa*) the same, above that and the fillet (*paṭṭikā*) one part; the dado (*kandhara*) is stated to be of five parts, and the fillet (*kampa*) should be made of half a part; the height of the fillet (*vājana*) should be two parts, and the fillet (*kampa*) should be made of half a part: the *Vedi-Bhadra*, of (these) four varieties, is suited to all kinds of buildings.

FOUR KINDS OF PRATI-BHADRA

53-89. (In the first variety) the height of the pedestal should be divided into twenty-six (equal) parts; of those parts the plinth (*janman*)

should be of three parts, and the fillet (*kampa*) of one part; above that the cyma (*abja*) should be of two parts, and the fillet (*kampa*) should be made of one part; the dado (*grīva*) should be eleven parts, and above that the fillet (*kampa*) one part; the cyma (*ambuja*) should be twice that; and the height of the corona (*kapota*) three parts; above that the interval (*antarita*) should be one part, and the cavetto (*prativājana*) equal to that (i.e. one part). According to some (architects) the height of the pedestal should be divided into thirty-two parts: (of these), the plinth (*janman*) should be two parts, and the corona (*kshepaṇa*) half a part; the cyma (*padma*) should be of two parts and a half and the small cyma (*kshudrābja*) half a part; equal to that should be the fillet (*kampa*) above it, and the dado (*kandhara*) above two parts; the fillet (*kampa*) should be half a part, so also the cyma (*abja*) and the fillet (*paṭṭikā*) above should be two parts; above that the cyma (*padma*) should be half a part, the fillet (*kampa*) half a part, and the dado (*kandhara*) ten parts; the fillet (*kampa*) should be half a part, and the cyma (*padma*) below should be made of one part; above that the fillet (*kampa*) should be half a part, and the dado (*kandhara*) above one part; the fillet (*uttara*) above should be one part, and the corona (*kshepaṇa*) should be half a part, and the cyma (*ambuja*) half a part; the height of the corona (*kapota*) should be three parts, and the fillet (*āliṅga*) half a part; the interval (*antarita*) above should be one part, and the cavetto (*prativājana*) one part. The height of the pedestal should be otherwise (divided into) one part more (i.e. thirty-three parts); (of these) the height of the plinth (*janman*) should be two parts and a half, and the fillet (*kampa*) above that half a part; the height of the cyma (*padma*) should be made of three parts, and the fillet (*kampa*) of half a part; the dado (*kandhara*) is said to be equal to that (i.e., half a part), and the fillet (*kampa*) half a part and the cyma (*ambuja*) the same; above that the *vajra-kumbha* (club-shaped pitcher) [1] should be made of two parts; the petal (*dala*) should be one and half parts, and the height of the *gala* (dado), the fillet (*uttara*), and the half-fillet

[1] i.e., elongated pitcher.

(*ardha-kampa*) should be five, two, and seven parts (respectively) and the cyma (*saroruha*) above half of that; the height of the corona (*kapota*) should be three parts, and the fillet (*āliṅga*) half a part; the interval (*antarita*) above should be one part, and the cavetto (*prativā-jana*) one part. The whole (height of the pedestal) being divided into still one part more (i.e., thirty-four parts), the plinth (*janman*) should be two parts and a half; above that the fillet (*kampa*) should be half a part, and the height of the cyma (*padma*) three parts; the fillet (*kampa*) should be half a part, so also the ear (*karṇa*), the fillet (*kampa*) should be half a part and the cyma (*ambuja*) the same, the *ratna* (jewel) *paṭṭa* (fillet) should be two parts, the petal (*dala*) half a part, and the corona (*kshepaṇa*) half a part; the ear (*karṇa*) should be one part, above that the corona (*kshepaṇa*) half a part, and the cyma (*ambuja*) one part; the corona (*kshepaṇa*) should be one part and a half, and dado (*kaṇṭha*) above that eleven parts; the fillet (*uttara*) should be one part, the half-fillet (*ardha-kampa*) half a part, and the cyma (*ambuja*) above two parts; the corona (*kapota*) should be one part and a half, the fillet (*āliṅga*) one part and a half, and the interval (*antarita*) one part; the cavetto (*Prati* i.e. *Prati-vājana*) should be one part, and the fillet (*vājana*) above should be one part and a half: *Pratibhadra*, of four varieties, is thus described; this is fit as the pedestal for the edifices of gods, Brahmins, and Kings (Kshatriyas).

Four kinds of Mañcha-Bhadra

90–124. The height (of the pedestal) being divided into thirty (equal) parts, the height of the plinth (*janma*) should be three parts; the fillet (*kampa*) above should be half a part, and the large cyma (*mahā-ambuja*) three parts; the fillet (*kampa*) should be half a part, the dado (*kaṇṭha*) two parts, the fillet (*kampa*) half a part, and so also the cyma (*ambuja*); the corona (*kapota*) should be one part and a half, and the cavetto (*prativājana*) two parts; above that the dado (*kaṇṭha*) should be eight parts, and fillet (*uttara*) one part; and above that the corona (*kshepaṇa*) should be (one part) the cyma (*padma*) one-and-a-half parts, and the beam (*gopānaka*) three

parts ; with the remaining parts should be made the fillet (*āliṅga*), the interval (*antarita*), and the cavetto (*prativājana*). The same (height) (in the second variety) being divided into one part more, the plinth (*upana*) is stated to be three parts ; the fillet (*kampa*) above should be half a part, and the cyma (*saroruha*) three parts and a half ; the corona (*kshepaṇa*) should be a half part, the fillet (*kampa*), the ear (*karṇa*), and the cyma (*ambuja*) half a part each ; the beam (*gopana*) should be two parts and a half, and its cavetto (*prativajana*) three parts ; above that the dado (*gala*) should be eight parts, and the fillet (*uttara*) one part; the fillet (*kampa*) should be half a part, so also the cyma (*abja*), and the height of the corona (*kapota*) should be three parts ; the fillet (*āliṅga*), the interval (*antarita*), and the cavetto (*prativajana*) should be half a part, half a part and one part and a half respectively. The height of the pedestal (in the third variety) being divided into thirty-three parts, the plinth (*upana*) is said to be two parts ; above that the fillet (*kampa*) should be half a part, and the large cyma (*mahambuja*) two parts and half ; above that the small cyma (*kshudrābja*) should be one part and a half, the fillet (*kampa*) half a part, and the interval (*antarita*) above two parts ; the fillet (*kampa*) should be half a part, so also the cyma (*padma*), and the height of the fillet (*paṭṭikā*) one part ; the cyma (*padma*) should be half a part, so also the fillet (*kampa*), and its dado (*gala*) should be five parts ; the fillet (*uttara*) above should be one part, the fillet (*kampa*) half a part, and so also the cyma (*ambuja*) ; the corona (*kopota*) should be one and half parts, and the cavetto (*prativājana*) should be equal to that; above that the interval (*antarita*) and the ear (*karna*) should be three parts, (together) and the fillet (*uttara*) one part; the fillet (*kampa*) should be half a part, so also the cyma (*padma*), and the height of the corona (*kapota*) should be three parts; and the remaining parts should be given to the fillet (*āliṅga*), interval (*antarita*) and the dado (*gala*) (together) with the upper fillet (*uttara*) as one part. (Once again) the height should be divided into thirty four parts ; (of these) the height of the plinth (*janman*) should be three parts, and the fillet (*kampa*) should be made of half a part ; the cyma (*abja*) (and) above that the small cyma (*kshudra-padma*) should

(together) be three and half parts ; the fillet (*kampa*) should be half a part, the dado (*gala*) seven parts, and the interval (*antara*) one part ; the fillet (*kampa*) should be made of half a part, the cyma (*padma*) of half a part, and the filament (*aṁśuka*) of two parts and a half, the corona (*kapota*) should be made of one part and a half, the fillet (*āliṅga*) of one part ; the two intervals (*antara*) and the two ears (*karṇa*) should be (together) six parts, and the fillet (*uttara*) above that should be one part ; the fillet (*kampa*) and the cyma (*abja*) should be half a part each, and the height of the beam (*gopāna*) should be three parts; above that the first fillet (*āliṅga*) and the (second) fillet (*vājana*) should be made of two parts only: the *Mañcha-bhadra* of these four varieties is thus described separately (lit. by names).

PROJECTION

125-128. The projections of all the mouldings beginning with the plinth, in connection with the (pedestals for the) temples of Śiva and Vishṇu, and the palace of the universal monarch (*chakra-vartin*), as also the temples of all other deities, are stated here in order as has been laid down by the ancients versed in the science (of architecture).

129-131. The projection of the plinth extending from the pillar may be equal to (the height of) the plinth, or greater by one-fourth, one-half, or three-fourths, or twice that.

132-135. As an alternative, the projection of the plinth extending from the base of the pillar should be measured in rods (of four cubits each), and is stated to be equal to one rod; or greater by one-fourth, one-half, or three-fourths of a rod ; or two rods, or three rods.

136-138. As another alternative, the projection of the plinth extending from the same (base of the pillar) in cubit measure is also stated to begin from one-fourth cubit, and should increase by the same (one-fourth cubit) ending at one-and-half cubits.

138-142. The projection of the cyma (*padma*) will be considered (here) : the projection of the cyma should be equal to its height ; or greater by one-fourth, half, or three-fourths ; or twice ; as an alternative the above mentioned proportions may be applied in cubit measure

also; (in all cases) the projection of the cyma should be symmetrical to the height of the pedestal.

143. The projections of the small cyma (*khudra-padma*), and fillets (*kampa*) should preferably be equal to them.

144. The projections of the fillet (*paṭṭikā*) and all other mouldings should be equal to them.

145. All the (various) parts of the pedestal together with those at the top should be made symmetrical to the (main) structure.

146. All the pedestals should be decorated with foliage (lit. leaves).

147. The fillet (between two mouldings) should be furnished with calyx (*nāṭaka*) and all the cymas (i.e., including cyma-recta and cyma-reversa) with petals.

148-149. The *kampa* (lower fillets) and *vājana* (fillets) at the bottom and the top (of the pedestal) should be square in shape, or they should be decorated with bejewelled flowers, leaves and such other figures.

150-151. The cavetto (*prativājana*) parts should be adorned with other ornaments; for this purpose the cavetto (parts) should be consolidated with *kankar* (gravels).

152-153. The *antara* (intervals or the parting fillets) and the other parts should be furnished with rows of images of leographs, like a sword, the whole (also) being almost circular and adorned with flowers.

154. The other details, of all the mouldings, not specified here should be carried out at one's own discretion.

Thus in the *Mānasāra*, the science of architecture, the thirteenth chapter, entitled:

The description of the pedestals for columns.

CHAPTER XIV

THE BASES OF COLUMNS

1. I shall now briefly give an account of the bases of columns in this science (of architecture).

2-4. The twelve varieties should begin from thirty *aṅgulas* (of three-fourths inch each) and increasing by six *aṅgulas* end at four cubits : these should be used respectively in buildings of one to twelve storeys.

5-9. The height of the base (of a column) should be four cubits in the buildings of the Brahmans, three cubits in those of the Kings (Kshatriyas), two and a half cubits in those of the crown princes, two cubits in those of the Vaiśyas, and one cubit in those of the Śūdras : these heights are stated to be proportionate to the heights of the (respective) buildings ; and the height of the base is said to be (measured) from its plinth to the fillet at the top.

FOUR KINDS OF PĀDA-BANDHA

10-22. The height (of the base) being (once) divided into twenty-four (equal) parts, the plinth (*vapraka*) should be of eight parts ; the height of the astragal (*kumuda*) should be made of seven parts, and the fillet (*kampa*) of one part ; the height of the ear (*karṇa*) should be three parts, and above that the fillet (*kampa*) one part ; the height of the band (*paṭṭikā*) should be three parts, and the fillet (*kampa*) should be made of one part. The height (of the base) being preferably divided into twenty-nine (equal) parts, the height of the plinth (*janman*) should be two parts, and the cyma (*padma*) should be equal to that (i.e. two parts) ; the fillet (*kampa*) should be made of one part, and the rest should be as stated before. Again, the height of the base being divided into twenty-seven (equal) parts, the plinth (*janman*) should be made of one part ; and the remaining parts of the

height are directed to be exactly as before. The height (of the base) (lastly) being divided into twenty-eight parts, the plinth (*janman*) should be made of two parts ; above that the fillet (*kampa*) should be one part, and the cavetto (*vapra*) above one part ; the dado (*kandhara*) is said to be made according to one's discretion, and the rest should be known to be as aforesaid : these are said to be the four varieties of the *Pāda-Bandha* (class of) bases.

FOUR KINDS OF URAGA-BANDHA

23-40. The height of the base being divided into eighteen (equal) parts, the height of the plinth (*vapra*) should be seven parts, and that of the astragal (*kumuda*) six parts ; the fillet (*kampa*) should be made of one part, and the dado (*kandhara*) should be equal to that (i.e. one part) ; the fillet (*paṭṭa*) together with the bands (*paṭṭikā*) should be two parts, and the fillet (*kampa*) should be made of one part. The height (of the base) being otherwise divided preferably into twenty parts (lit. into those parts increased by two more), the fillet (*vājana*) should be one part, and below that the dado (*kandhara*) two parts ; below the latter the fillet (*vājana*) should be one part, and the rest should be made as stated before. Of the same (height of the base being divided into) parts increased by two (i.e., twenty-two), the fillet (*kampa*) above the pitcher (*kumbha*) especially should be one part, so also the ear (*karṇa*), and above that the fillet (*kampa*) one part; the beam (*gopanaka*) above should be two parts, and the remainder should be its cavetto (*prativājana*). The same height being otherwise divided into twenty-four(equal) parts, the height of the plinth (*vapra*) should be seven parts, and that of the astragal (*kumuda*) six parts; above that the fillet (*kampa*) should be one part, and the dado (*kandhara*) should be equal to that (i.e. one part); above that the fillet (*vājana*) should be one part, and the height of dado (*kandhara*) three parts ; the speciality of that region is that it should be decorated with sharks (*makara*) etc. ; above that the fillet (*vājana*) should be one part, and the fillet (*kampana*) one part : above that the fillet (*kampa*) should be one part, and the remainder its cavetto (*prativājana*): these are known to be the four varieties of *Uraga*-(snake) *bandha* (type of bases).

41-42. It (this type of base) should be shaped like the face of the snake and be furnished with two crescent mouldings (*prati*) at the top; all these four types should be made circular (like) the pitcher (*kumbha*).

43. These (bases) should be employed in the buildings of the gods, the Brahmans, and the kings (Kshatriyas).

FOUR KINDS OF PRATIKRAMA

44-62. Of the twenty-one (equal) parts in the height (of the base), the small plinth (*kshudropāna*) should be one part; the cyma (*padma*) should be two parts and a half, and above that the fillet (*kampa*) one part and a half; the cavetto (*vapra*) above should be seven parts, and the supporting pitcher (*dhārā-kumbha*) six parts; the fillet (*ālinga*) should be one part, and the interval (*antarita*) equal to that (i.e. one part); the cyma (*padma*) and the fillet (*kampa*) together, or else the band (*paṭṭa*) should be two parts: this (type of base) should be decorated with (the images of) elephants, horses, lions, crocodiles, etc. (Again) of the twenty-two parts (of height of the base), the pitcher (*kumbha*) should be employed above the astragal (*kumuda*) especially, the fillet (*ālinga*) should be one part and the fillet (*vājana*) one part; the dado (*kandhara*) should be two parts, and the band (*paṭṭikā*) and the fillet (*vājana*) should be one part each: these parts should be adorned with the images of the aforesaid (animals), and all ornaments; and the rest should be made as before. Then, the same (height of the base) should be again divided into one part more (i.e., twenty-three); (of those) the pitcher (*kumbha*) should be one part as before, and the fillet (*kampa*) above should be made of one part; the dado (*kandhara*) should be one part, and above that the fillet (*kampa*) one part; above the latter the ear (*karṇa*) should be two parts, and the fillet (*vajana*) one part: this (type of base) should be decorated as before. The same height (of the base) being divided into one part more (i.e. twenty-four), the fillet (*kampana*) and the interval (*antara*) at the upper and the lower regions should be one part each; the three-fold band (*tripaṭṭa*) and above that the interval (*antara*) should be two parts (together), the same interval (*antara*) and the fillet (*vājana*) should be made of one part each; the rest should be made as stated before, and it should be decorated as before.

63-64. This (type of base) should be employed in the buildings of gods, and the twice born (three higher castes) in order: this is the type (of base) named *Prati-krama*, and this is stated to be of four varieties.

KUMUDA-BANDHA

65-71. The height (of the base) from the plinth (*janman*) to the fillet (*vājana*) should be divided into twenty-seven (equal) parts; (of these) the height of the plinth (*janman*) should be two parts, and the height of the cyma (*ambuja*) equal to that (i.e. two parts): the fillet (*kampa*) should be one part, and the height of the cavetto (*vapra*) six parts; the cyma (*padma*), the ear (*karṇa*), and so also the cyma (*padma*) should be one part each; the height of the astragal (*kumuda*) should be three parts, and that of the cyma (*padma*) one part; the cyma (*padma*) up to the ear (*karṇa*) should be one part, and the fillet (*kampa*), and the cyma (*abja*) one part each; the band (*paṭṭa*) should be two parts, the cyma (*abja*) one part, and the fillet (*kampa*) should be made of one part.[1]

72-78. Again the measurement of the height (of the base) being as before, the band (*paṭṭikā*) should be (the same) in particular (i. e. one part); the beam (*gopāna*) above should be made of two parts and beautifully ornamented; according to some (architects) a three-fold band should be made in place of the astragal (*kumuda*); bands (*paṭṭa*) are the peculiarity of the middle part (of this base) (which are) adorned with flowers and jewels; or this (middle part) may be supplied with a declivity (*kaṭaka*), or made plain and) circular; and the astragal (*kumuda*) may be triangular or hexagonal; similarly it may be made octagonal when it (the base) is called *Padma-kesara*.

79. This (type of base) is fit for all kinds of buildings: the best architect should employ it (for that purpose).

80-88. The height larger than that of the former type (of base) should be divided into twenty-nine (equal) parts; of those the height

[1] The text designated as B. omits the line 71, but adds between lines 70 and 72, fifty-two lines which are hoplessly corrupt but purport to contain details of some other varieties of these bases.

of the plinth (*janman*) should be two parts, and the height of the cavetto (*vapra*) four parts; the height of the cyma (*padma*) should be half a part, and the dado (*kandhara*) should be equal to that (i.e. a half part); the cyma (*padma*) above should be equal to the same (i.e. a half part), and the height of the astragal (*kumuda*) one part; the cyma (*padma*) should be one-and-a-half parts, so also the fillet (*kampa*), and the height of the ear (*karṇa*) two parts; the fillet (*kampa*) should be half a part, so also the cyma (*padma*), and the height of the band (*paṭṭikā*) should be two parts; above that the cyma (*padma*) should be one part, and the fillet (*kampa*) above equal to that (i. e. one part); the height of the plinth (*janman*) may otherwise be half a part, and the fillet (*kampa*) above otherwise half a part; the rest should be made as before except these above-mentioned peculiarities.

89–92. (Of the same height of the base in another variety) the height of the plinth (*janman*) should be one part, and the cyma (*padma*) half a part; the rest should be made as before except a little alteration (mentioned below): namely, that a corona (*kapota*) may be in place of the band (*paṭṭikā*), and the rest should be discreetly made: these are said to be the four varieties (of bases).

FOUR KINDS OF PUSHPA-PUSHKALA

92–94. The type (of bases) named *Pushpa-pushkala* (are described now): they are suited to all those (kinds of) buildings; they should be made by the best architect for buildings of one to twelve storeys and of the smallest, the intermediate, and the largest sizes.

95–107. (Of one of these varieties) the height from the plinth (*janman*) to the fillet (*vājana*) being divided into thirty-two (equal) parts, the height of the plinth (*janman*) should be two parts, and the fillet (*vājana*) one part; the large cyma (*mahāpadma*) should be seven parts, the ear (*karṇa*) one part, and so also the (large) cyma (*ambuja*); the pitcher (*kumbha*) above should be four parts, and the cyma (*padma*) one part; above that the fillet (*kampa*) should be one part, and the height of the dado (*gala*) three parts; the fillet (*kampa*) should be one part, the dado (*gala*) one part, and the beam (*gopāna*) four parts; the

fillet (*āliṅga*) above should be one part, and the interval (*antarita*) also one part; the face-like ornament (*prati-mukha*) should be two parts, and the fillet (*vājana*) above one part. (Again of the same height) the (small) cyma (*padma*) above the large cyma (*mahā-ambuja*) should be one part more. The cyma (*padma*) above the plinth (*janman*) may otherwise be greater by one part over the (original) one part. Likewise (in the fourth variety) the fillet (*kampa*) below the large cyma (*mahā-ambuja*) should be made of one part; that large cyma (*mahā-ambuja*) should be six parts, and the rest should be made as stated before: thus are stated the four varieties.

Four kinds of Śrī-Bandha

107-121. The type of bases named *Śrībandha* (is described here): (they are) suited to the palaces of the universal manarchs (*Chakravartin*) and the temples of Vishṇu and Śiva. (Of the first variety) of twenty-six parts of the height, one part is said to be the plinth (*janman*); the height of the cavetto (*vapra*) should be six parts, and the height of the astragal (*kumuda*) six parts; the (one) ear (*karṇa*) should be one part, (another) ear (*karṇa*) four parts, and the fillet (*kampa*) one part; above that the fillet (*padma*) should be one part, and the height of the beam (*gopāna*) three parts, the fillet (*āliṅga*) above should be one part, and the interval (*antarita*) likewise one part; the face-like ornament (*prativaktra*) should be two parts, and the fillet (*vājana*) one part. (In the second variety of this type) the plinth (*janman*) may, otherwise, be two parts, and its face-like ornament (*pratika*) one part; the rest should be made as before. (In the third variety of this type) the corona (*kshepaṇa*) above the plinth (*janman*) should be one part; the beam (*gopāna*) above should be half a part, and the fillet (*āliṅga*), and the interval (*antarita*) one part each; its face-like ornament (*prativaktra*) should be one part, and the half-fillet (*ardha-vājana*) should be half a part. Again (i. e. in the fourth variety) the plinth (*janman*) should be one part, and the small cyma (*abjaka*) also equal to that (*i. e.* one part); above that the fillet (*kampa*) should be one part, and the rest should be made as stated before: these are said to be the four varieties.

FOUR KINDS OF MAÑCHA-BANDHA

121–142. The *Mañcha-bandha* (type of bases) will (now) be described : they should be made for the buildings of gods and of kings. (The height of the first variety) from the plinth (*janman*) to the fillet (*vājana*) being divided into twenty-six (equal) parts, the height of the plinth (*janman*) should be one part and a half, and the height of the cyma (*padma*) two parts ; the fillet (*kampa*) should be the same (i. e. two parts), the cavetto (*vapra*) as stated before six parts, and the pitcher (*kumbha*) two parts ; above that the fillet (*kampa*) should be one part, and the dado (*kandhara*) two parts ; the fillet (*kampa*) should be one part, the band (*paṭṭa*) two parts, and its projection (*kshepaṇa*) one part ; the fillet (*āliṅga*) above should be made of one and a half parts, and the fillet (*kampa*) of one part ; the face-ornament (*prati*) should be one part and a half, and the fillet (*vājana*) too should be one part and a half ; it (this type) should be decorated with the images of leographs, lions, crocodiles, etc. (In the second variety, of the same number of parts) the height of the plinth (*janman*) should be two parts, and the cyma (*ambuja*) should be equal to that (i. e. two parts) ; the corona (*kshepaṇa*) should be one part, and the height of the cavetto (*vapra*) six parts ; the height of the torus (*kumuda*) should be four parts, and the fillet (*kampa*) should be made of one part ; the dado (*kandhara*) should be two parts, and the fillet (*kampa*) should be made of one part ; the height of the band (*paṭṭikā*) should be two parts, and the fillet (*kampa*) above that one part ; the ear (*karṇa*) should be made of one part, and the fillet (*vājana*) of one part ; the face-ornament (*prati*) should be of one part, and the fillet (*vājana*) one part. (In the third variety) the torus (*kumuda*) and the face-ornament (*prati*) may otherwise be furnished with the three-fold band (*tri-paṭṭa*) ; the rest should be made as before, and the minor ornaments should be as before. (In the fourth variety, of the same twenty-six parts) the band (*paṭṭikā*) above should be the same (*i. e.* one part), and the dado (*kandhara*) one part ; the rest should be as stated before, and it should be tastefully decorated ; these are said to be the four kinds.

FOUR KINDS OF ŚREṆI-BANDHA

142-167. The *Śreṇi-bandha* (type of bases) is similarly described: the wise (architect) should make (them) also for the temples of all the gods. (In the first variety) of eighteen parts of the height, the plinth (*janman*) should be one part and a half; the small fillet (*kshudra-kampa*) should be half a part, and its large cyma (*mahā-ambuja*) five parts; the dado (*kandhara*) should be one part, the cyma (*abja*) one part, and the pitcher (*kumbha*) three parts; above that the cyma (*padma*) should be one part, and the fillet (*āliṅga*) above the latter one part; the fillet (*vājana*) above should be one part, the face-ornament (*prati*) two parts, and the fillet (*vājana*) one part. (The height of the base being again) divided into twenty-two (equal) parts, the height of the plinth (*janman*) should be two parts; the small corona (*kshudra-kshepaṇa*) should be half a part, and the cyma (*ambuja*) four parts and a half; the dado (*kandhara*) above should be one part, and the cyma (*abja*) should be equal to that (i. e. one part); the height of the pitcher (*kumbha*) should be three parts, and the height of the cyma (*padma*) one part; above that the fillet (*kampa*) should be one part, and the dado (*kandhara*) two parts; the corona (*kshepaṇa*) should be one part, and the cyma (*padma*) should be made of one part; the height of the band (*paṭṭikā*) should be two parts, the cyma (*padma*) one part, and the fillet (*vājana*) one part. (The same height) being divided into one part more (i. e. twenty-three parts), the plinth (*pādukā*) should be two parts and a half; above that the fillet (*kampa*) should be made of half a part, and the large cyma (*mahā-ambuja*) of five parts; the dado (*kandhara*) should be made of one part, and the cyma (*padma*) of one part; the height of the torus (*kumuda*) should be three parts, and above that the cyma (*padma*) one part; the fillet (*kampa*) should be made of one part, and the dado (*kandhara*) should be equal to that (i.e. one part); the fillet (*vājana*) above should be equal to that (i.e. one part), and similarly the interval (*antarita*) three parts; the face-ornament (*prati*) attached to it should be made of (two) parts, and the fillet (*vājana*) of one part. (The same height)

being divided into one part more than that (i.e. into twenty-four parts), the height of the plinth (*janma*) should be one part; the height of the small cyma (*kshudra-padma*) should be one part, and the fillet (*vājana*) above that one part; the large cyma (*mahā-padma*) should be made of five parts, and the petal (*dala*) of one part at its top; the rest should be as before; (all the mouldings) above should be decorated with crocodiles and lions, etc.; these are known to be the four varieties (of the *śreṇi-bandha* bases).

FOUR KINDS OF PADMA BANDHA

167-193. The *Padma-bandha* (type of bases) will (now) be described: they are fit for temples of all gods, goddesses, and of Śiva (in particular); they should be employed (in buildings) as they ensure all success, beauty, and good luck. (In the first variety) the height (of the whole base) being divided into twenty-one parts, the height of the plinth (*janman*) should be one part; the height of the cyma (*padma*) should be one part, and the fillet (*kampa*) should be made of one part; the height of the pitcher (*kumbha*) should be five parts, and the corona (*kshepaṇa*) should be one part; the lower cyma (*padma*) should be three parts, and the ear (*karṇa*) above one part; the fillet (*kampa*) above should be equal to that (*i.* e. one part), and the height of the band (*paṭṭikā*) two parts; above that the fillet (*kampa*) should be one part, and the dado (*kandhara*) one part; above that the band (*paṭṭa*) should symmetrically be made of two parts. Of the same number of parts (i.e. twenty-one) of the height, the plinth (*sopāna*) is said to be three parts; the height of the cyma (*padma*) should be one part, and the height of the torus (*kumuda*) five parts; above that the fillet (*kampa*) should be one part, and the height of the cyma (*padma*) four parts; above that the fillet (*kampa*) should be made of one part, and above the latter the dado (*gala*) of two parts; the corona (*kshepaṇa*) should be one part, and the cyma (*padma*) should be made of one part; the height of the corona (*kapota*) should be two parts, and the fillet (*kampa*) above that one part. (Of the same number of parts of the height of the base), the cyma (*abja*) in its place should be as before, and the fillet (*kampa*) one part; above that

the ear (*karṇa*) should be two parts, and the fillet (*kampa*) above it one part; the interval (*antarita*) above should be two parts, and the face-ornament (*prati*) one part; above that the fillet (*vājana*) should be one part, and the rest (of this variety) should be constructed as aforesaid. (Of the same number of parts of the height of the base) the height of the plinth (*janman*) should be three parts, and the cyma (*padma*) should be made of one part; the dado (*kandhara*) should be one part, and the cyma (*padma*) above one part; the height of the pitcher (*kumbha*) should be five parts, and the cyma (*padma*) should be made of one part; above that the fillet (*kampa*) should be made of one part, and the ear (*karṇa*) above the latter of one part; above that the cyma (*padma*) should be one part, and the height of the corona (*kapota*) one part; the fillet (*āliṅga*) should be one part, and the interval (*antarita*) also one part; and the duplicate fillet (*prati-vājana*) should be made of one part.

FOUR KINDS OF KUMBHA-BANDHA

194-239. The four (five) varieties of *Kumbha-bandha*: (in these) the (suitable) parts should be tastefully decorated with crocodiles and lions, etc. (In the first variety) the height (of the base) should be divided particularly into twenty-four (equal) parts; (of these) the height of the plinth (*janman*) should be two parts, and the height of the cyma (*padma*) should be equal to that; above that the fillet (*kampa*) should be one part, and the height of the ear (*karṇa*) three parts; above the latter the fillet (*kampa*) should be one part, and the height of the band (*paṭṭikā*) one part; above the latter the fillet (*kampa*) should be made of one part, and the cyma (*padma*) below of one part; the ear (*karṇa*) above should be one part, and the cyma (*padma*) should be made of one part; above the latter the pitcher (*kumbha*) should be three parts, and the cyma (*padma*) one part; above the latter the drip (*nimna*) should be one part, and above that the fillet (*kampa*) one part; above the latter the drip (*nimna*) should be equal to it, and the face-ornament (*prati*) above one part. (In the second variety) of the same height (divided into parts) as before, the cyma (*padma*) and the ear (*karṇa*) should be in particular of the same measures (as before); the pitcher

(*kumbha*) at the middle should be one part, and above that the drip (*nimnaka*) one part; (and) the rest should be made as before. (In the third variety) of particularly the same parts of the height (of the whole base), the height of the plinth (*janman*) should be two parts, and the height of the cyma (*padma*) equal to that; above the latter the drip (*nimna*) should be one part, and the height of the pitcher (*kumbha*) one part; above the latter the fillet (*kampa*) should be one part, and the dado (*kandhara*) one part; above the latter the fillet (*kampa*) should be one part, and the fillet (*kampa*) above should be equal to that (i.e. one part); the height of the corona (*kapota*) should be one part, and the fillet (*vājana*) one part; above the latter the cyma (*padma*) should be one part and a half, and the drip (*nimna*) should be made of one part; above the latter the cyma (*padma*) should be one part and a half, and the height of the pitcher (*kumbha*) one part; above the latter the cyma (*padma*) should be one part and a half, and the drip (*nimna*) should be made of one part; above that the corona (*kshepaṇa*) should be one part, and the drip (*nimna*) equal to that (i.e. one part); above that the face-ornament (*prati*) with all its characteristics should be made of one part. As an alternative (i.e. of the same number of parts of the height), the plinth (*janman*) should be two parts, and the height of the cyma (*padma*) should be equal to that; the dado (*kandhara*) is said to be one part, and the height of the pitcher (*kumbha*) one part; above that the drip (*nimna*) should be one part, and the small band (*kshudra-paṭṭa*) and the small cyma (*kshudra-abja*) one part each; the corona (*kapota*) above should be two parts, and above that the corona (*kshepaṇa*) one part; above the latter the cyma (*padma*) should be one part and a half, and the dado (*kandhara*) equal to that; the cyma (*padma*) above should be equal to that, and the height of the pitcher (*kumbha*) three parts; the lower cyma (*padma*) should be one part, and above that the dado (*kandhara*) one part; the fillet (*kampa*) should be one part, and the small cyma (*kshudra-abja*) one part and a half; the corona (*kapota*) above should be half a part, and the remainder should be the duplicate fillet (*prati-vājana*). (In the fifth variety) the height (of the base)

from the plinth (*janman*) to the top fillet (*vājana*) being divided into twenty-six (equal) parts, the height of the plinth (*janman*) should be two parts, and the height of the cyma (*padma*) equal to that; above the latter the fillet (*kampa*) should be one part, and the dado (*kandhara*) two parts; above that the fillet (*kampa*) should be one part, and the cyma (*padma*) should be made of one part; the height of the band (*paṭṭikā*) should be two parts, and above that the cyma (*padma*) one part; the fillet (*āliṅga*) above should be one part, and the upper cyma (*padma*) one part; the height of the pitcher (*kumbha*) should be three parts, and the cyma (*padma*) above that one part; above the latter the cyma (*padma*) should be one part, and the dado (*kandhara*) two parts; the fillet (*kampa*) should be one part, the cyma (*abja*) one part, and the height of the corona (*kapota*) one part; the fillet (*kampa*) above should be one part, and the rest should be discreetly constructed. All these (bases) should be decorated with the images of the crocodiles, etc., and the small vestibule (*kshudra-nāsi*) and such other ornaments; these are said to be the five varieties; the rule about the (shape of the) pitcher-parts (in these bases) is that they should be made circular or furnished with three-fold bands (*tripaṭṭa*), or with ring-like ornaments (*kaṭaka*) to serve as a receptacle; this type (of bases) named *Kalaśa-Bandha* is suitable for the buildings of the gods (i.e. temples) and of the kings (i.e. palaces).

VAPRA-BANDHA

240-248. The height of the base called *Vapra-Bandha* being divided into thirty-one (equal) parts, the plinth (*janman*) in height should be two parts, and the fillet (*kampa*) should be made of half a part; the cyma (*padma*) should be one part and a half, and the fillet (*vājana*) above that half a part; the height of the cavetto (*vapra*) should be three parts and a half, the cyma (*padma*) half a part, and the fillet (*kampa*) half a part; the height of the dado (*kandhara*) should be two parts, the fillet (*kampa*) half a part, and the cyma (*padma*) half a part; the height of the band (*paṭṭikā*) should be one part, the cyma (*padma*) half a part, and the fillet (*vājana*) half a part; the height of the ear (*karṇa*) should be four parts, the corona

(*kshepaṇa*) one part, and the cyma (*ambuja*) half a part; the height of the corona (*kapota*) should be two parts, and the duplicate fillet (*prati-vājana*) one part; the *Vapra-bandha* is thus described.

VAJRA-BANDHA

248-259. The *Vajra-Bandha* (base) is described here: (in this) of the height of same number of parts (i.e. thirty-one), the height of the plinth (*janman*) should be one part; above that the fillet (*kampa*) should be half a part, and the height of cyma (*padma*) one part and a half; the fillet (*kampa*) above should be half a part, and the dado (*kandhara*) equal to that (i.e. half part); above that the fillet (*kampa*) should be made of half a part, and cyma (*padma*) of half a part; the round pitcher (*vajra-kumbha*) should be two parts, and above that the cyma (*saro-ruha*) half a part; above that the fillet (*kampa*) should be half a part, and the height of the ear (*karṇa*) one part; above that the fillet (*kampa*) should be half a part, and the cyma (*ambuja*) equal to that (i.e. half a part); the corona (*kapota*) should be two parts, and the duplicate fillet (*prati-vājana*) one part; the dado (*kandhara*) should be two parts, and the fillet (*kampa*) and the cyma (*padma*) one part (jointly); the round band (*vajra-paṭṭa*) should be two parts, and the cyma (*padma*) and the fillet (*kampa*) (jointly) one part; the *Vajara-Bandha* is thus described.

TWO KINDS OF ŚRĪ-BHOGA

259-280. The *Śrī-bhoga* (type of base) is described here: (of this) the height being divided into twenty-seven parts, the plinth (*janman*) should be two parts and a half; the small fillet (*kshudra-kampa*) should be half a part, and the height of the cyma (*ambuja*) three parts; the small cyma (*kshudra-padma*) should be half a part, and the fillet (*kampa*) should be made of half a part; above that the ear (*karna*) should be one part, and the fillet (*kampa*) should be constructed of half a part; the small cyma (*kshudr-ābja*) should be equal to that (i.e. half a part), and the height of the torus (*kumuda*) three parts; above that the cyma (*padma*) should be half a part, and the corona (*kshepaṇa*) should be equal to that; the height of the ear

(*karṇa*) should be one part, and the fillet (*kampa*) should be made of half a part; the height of the cyma (*padma*) should be equal to that, and the height of the band (*paṭṭikā*) one part; the cyma (*padma*) is desired to be half a part, the fillet (*kampa*) half a part, and the dado (*kandhara*) two parts; the fillet (*kampa*) and the cyma (*padma*) should be one part each, and the small torus (*kapotaka*) two parts; above that the fillet (*āliṅga*) and the interval (*anta* for *antara*), etc., should be made of two parts. As an alternative, (i.e. in the second variety of this type the height being divided into same number of parts, i.e., twenty-seven), the plinth (*janman*) should be two parts, and the small plinth (*kshudropāna*) one part; the large cyma (*mahāmbuja*) should be one part, and the small cyma (*kshudra-paṅkaja*) half a part; the fillet (*kampa*) should be half a part, the ear (*karṇa*) two parts, and the fillet (*kampa*) and the cyma one part each; the corona (*kapota*) should be two parts, and the height of the dado (*gala*) one part; the duplicate fillet (*prati-vājana*) should be one part, and the height of the dado (*gala*) two parts; the cyma (*padma*) should be one part, the fillet (*kampa*) one part, and the height of the band (*paṭṭikā*) two parts; the height of the dado (*gala*), the fillet (*vājana*), and the fillet (*kampa*) above should be (together) one part and a half; the height of the cyma (*padma*) should be equal to that (i.e., one and half parts), and the corona (*kapota*) two parts and a half; and the face-ornament (*pratima*) should be two parts; (these make) the height of twenty-seven parts; these are stated to be the two varieties of *Srībhoga*; they should be furnished with all ornaments.

RATNA-BANDHA

281–296. The base (called) *Ratna-bandha* should be divided into twenty-six parts: (of these) the plinth (*janman*) should be one part and a half, and the small fillet (*kshudra-vājana*) half a part; the cavetto (*vapra*) should be one part, the cyma (*padma*) one (?) part, and the plinth (*āsana*) half a part; the bejewelled cavetto (*ratna-vapra*) should be made of four parts, and the cyma (*abja*) should be made symmetrical of half a part; the fillet (*kampa*) above should be equal to that (i.e. half a part), and the drip (*nimna*) should be made of half

a part; above that the fillet (*kampa*) should be half a part, and above the latter the cyma (*abja*) half a part; the bejewelled fillet (*ratna-kampa*) should be two parts, and above that the cyma (*ambuja*) half a part; above that the fillet (*kampa*) should be half a part, and the dado (*kandhara*) two parts; the (combined) fillet and cyma (*kampa-padma*) should be one part, and the bejewelled band (*ratna-paṭṭa*) one part; above that the (combined) cyma and fillet (*padma-kampa*) should be constructed of one part; the ear (*karṇa*) should be one part and a half, and the fillet (*vājana*) above half a part; above that the cyma (*abja*) should be half a part, and the corona (*kapota*) two parts; the fillet (*āliṅga*) should be half a part, and the remainder should be its duplicate fillet (*prati-vājana*); those parts (where they are usually carved) should be adorned with the images of leographs and crocodiles, etc., and all the other parts should be decorated with lotuses and jewels, etc.; this type (of base) should be constructed for the temples of Śiva and Vishṇu; the *Ratna-bandha* is thus described.

PAṬṬA-BANDHA

297-304. The height from the plinth (*janman*) to the top fillet (*vājana*) should be divided into same number of parts (i.e., twenty-six); (of these) the height of the plinth (*janman*) should be two parts, and above that the fillet (*vājana*) half a part; the large cyma (*mahā-abja*) should be two parts and a half, and the cyma and fillet (*padma-kampa*) together one part; the drip (*nimna*) and the fillet (*kampa*) together should be one part, and above the latter the cyma (*padma*) one part; the large band (*mahā-paṭṭa*) should be two parts, and the cyma and fillet (*padma-kampa*) together one part; the dado (*kandhara*) should be one part, and the (combined) corona and cyma (*kshepaṇa-abja*) five parts; the height of the corona (*kapota*) should be two parts, and the remainder should be its duplicate fillet (*prati-vājana*); thus is described the *Paṭṭa-bandha* (type of base); it should be decorated with all kinds of ornaments.

FOUR KINDS OF KUKSHI-BANDHA

305-346. The height of it (i.e., the first variety) should be (divided into) eighteen parts, (of which) the height of the plinth

(*janma*) should be two parts; above that the fillet (*kampa*) should be half a part, and the large cyma (*mahāmbuja*) two parts and a half; the cyma (*padma*) and the fillet (*kampa*) together should be one part, and the drip (*nimna*) and the interval (*antarita*) together one part; the face-ornament (*prati*) should be one part and a half, and the fillet (*vājana*) one part; the dado (*kandhara*) should be one part, and the fillet and the cyma (*kampa-padma*) together one part; the circular pitcher (*vṛitta-kumbha*) should be two parts, and the cyma and corona (*padma-kshepaṇa*) together one part; above that the ear (*karṇa*) should be one part, and the (combined) fillet and the cyma (*kampa-padma*) one part; the corona (*kapota*) should be one part and a half, and the fillet (*vājana*) above half a part; this (variety) should be furnished with all ornaments, and be decorated with the images of leographs and crocodiles, etc. (In the second variety), the height being (divided into the same number of parts) increased by one (i. e., nineteen), the height of the plinth (*janman*) should be one part; above that the cyma (*padma*) should be half a part, and the fillet (*kampa*) should be made of half a part; the large cyma (*mahā-ambuja*) above should be two parts, and the cyma-drip (*padma-nimna*) one part; above that the cyma (*abja*) should be half a part, and the height of the astragal (*kumuda*) one part and a half; the cyma (*abja*) should be half a part, so also the ear (*karṇa*), and the cyma (*abja*) above the latter half a part; the height of the band (*paṭṭikā*) should be one part and a half, and the (combined) cyma and fillet (*padma-kampa*) one part; the small drip (*nimnaka*) above should be half a part, and the interval *antarita*) equal to that; the face-ornament (*prati*) above should be one part, and the fillet (*vājana*) half a part; the dado (*kandhara*) is said to be one part, and the fillet (*kampa*) should be constructed of half a part; the cyma (*padma*) should be half a part, the corona (*kapota*) one part and a half, and the fillet (*vājana*) one part; there should be one face-band (*prati-bandha*), and thus is stated to be the second variety; the rest should be made as before, and it should be decorated with all ornaments. (In the third variety) the height being divided into twenty-six parts, the height of the plinth (*janman*)

should be one part; the small plinth (*kshudropāna*) should be one part, and the height of the cyma (*padma*) one part; the fillet (*kampa*) above should be one part, and the dado (*kandhara*) two parts; above that the fillet (*kampa*) should be one part, and the cyma (*padma*) should be made of one part; the height of the artragal (*kumuda*) should be ten parts, and the cyma (*padma*) should be made of one part; above that the fillet (*kampa*) should be one part, and the dado (*gala*) two parts; above that the fillet (*kampa*) should be one part, and the cyma (*padma*) should be made of one part; the height of the corona (*kapota*) should be two parts, and the remainder should be its duplicate face-ornament (*prati-vājana*); the (combined) band and fillet (*paṭṭa-kampa*), the corona (*kapota*), and the two bands (*paṭṭa*) may otherwise be circular; the lower parts of the two ears (*karṇa*) should be adorned with the images of leographs, etc. (In the fourth variety) the height being divided into twenty-four parts, the height of the plinth (*janman*) should be three parts; the fillet (*kampa*) above should be one part, and the drip (*nimna*) should be constructed of one part; above that the porches (*bhadra*) should be made of five parts each; above that the fillet (*kampa*) should be one part, and the small drip (*nimnaka*) should be equal to that; the interval (*antarita*) above should be equal to that, and the face-ornament (*prati*) should be made of one part; above that the fillet (*kampa*) should be one part, and the dado (*kandhara*) above equal to that; above that the fillet (*kampa*) should be one part, and the cyma (*padma*) should be made of one part; the height of the corona (*kapota*) should be three parts, and the dado (*kandhara*) one part; the face-ornament (*prati*) above should be equal to that, and the pitcher (*kumbha*) eight parts; in the corona (*kapota*) part there should be the projecting band (*bhadra-paṭṭa*), and also the leaf-band (*patra-paṭṭa*): these are said to be the four varieties (of the *Kukshi-bandha* type of base).

KAMPA-BANDHA

346-358. The *Kampa-Bandha* (type of bases) is now described: the height from the plinth (*janman*) to the top fillet (*vājana*) being

divided into thirty-six parts, the (large) plinth (*janman*) should be four parts, and the small plinth (*upāna*) one part; the large cyma (*māhābja*) should be five parts, and the small cyma (*kshudra-abja*) one part; above that the fillet (*kampa*) should be made of one part, and the drip (*nimna*) of one part; above that the fillet (*vājana*) should be one part, and the cyma (*padma*) above equal to that (i.e., one part); the pitcher (*kumbha*) should be equal to the height of the large cyma (*māha-abja*) (i.e. five parts), and above that the cyma (*abja*) one part; above that the fillet (*kampa*) should be one part, and the fillet (*āliṅga*) above one part; above that the interval (*antarita*) should be one part, and the face-ornament (*prati*) should be made of two parts; above that the fillet (*vājana*) should be one part, and the corona (*kshe-paṇa*) one part; above that the dado (*kandhara*) should be one part, and the fillet (*kampa*) should be made of one part; above that the cyma (*padma*) should be one part, and the height of the corona (*kapota*) three parts; the fillet (*āliṅga*) above should be one part, and the face-ornament (*prati*) should be constructed of one part.

ŚRĪ-KĀNTA

369-372. (In this type) the band (*paṭṭa*), especially on the pitcher (*kumbha*) part, should be circular; the *Śrīkānta* (type of base) is said to be of that characteristic; it is decorated with all ornaments (as before): its height being divided into thirty-eight parts, the height of the plinth (*upāna*) should be three parts; the small plinth (*kshudro-pāna*) should be one part, and the large cyma (*mahā-ambuja*) eight parts; the small cyma (*kshudrābja*) should be one part, and the dado (*kandhara*) should be equal to that; above that the cyma (*padma*) should be one part, and the height of the small band (*paṭṭikā*) three parts; the small fillet (*kshudra-kampa*) should be one part, and the height of the cyma (*padma*) four parts; the height of the small cyma (*kshudrābja*) should be one part, and the drip (*nimna*) above one part; the cyma (*padma*) above should be equal to that, and the pitcher (*kumbha*) above three parts; above that the fillet (*kampa*) should be one part, and the corona (*kshepaṇa*) should be made equal to that; the dado (*kandhara*) should be two parts, and the fillet (*kampa*) should

be made of one part ; the height of the cyma (*padma*) should be equal to that, and the height of the corona (*kapota*) one part ; above that the fillet (*āliṅga*) should be one part, and the face-ornament (*prati*) should be made of one part : this should be the *Śrīkānta* ; this (type) should be employed in the temples of Śiva and Vishṇu.

Projection of the Base

373-375. That (projection) is the peculiarity of the mouldings between the plinth (*janman*) and the (uppermost) fillet (*vājana*); the increment and the decrement (of projection) should correspond to the measurement of those objects (i e. the mouldings) ; if it be disproportionate (lit. greater or less than what it should be) to the height (of the mouldings) all defects would be the result.

376-377. The projection should be equal to the moulding, it may be three-fourths, one-half, or one-fourth of it, but in all cases the proper projection should be that which fits in beautifully.

378-379. The projection of the plinth (*upāna*) may be of three kinds : it (the projection) may be equal to the height of the plinth, or it may be greater by one-fourth, or by three-fourths.

380-381. With regard to the cavetto (*vapra*) it (the projection) should be equal to its height ; now the projection of the torus (*kumuda*) is considered : it (the projection) should be equal to the height of the torus (*kumuda*) ; and the projection of the band (*paṭṭikā*) should extend up to the end of the cavetto-fillet (*vapra-paṭṭa*.)

382. The projections of the band (*paṭṭa*) and the beam (*gopāna*) should be equal to them.

383. The projections of all the small cymas (*kshudra-paṅkaja*) should be equal to them.

384. These (projections) should be made such as to give beauty and strength to the mouldings.

Projection in rod (*daṇḍa*) measure

385-389. As an alternative, the projections are now considered in the rod measurement : one rod, one rod and a half, two rods, (? two rods and a half), three rods, three rods and a half, four rods,

four rods and a half, or five rods, these are (the nine) projections of the plinth (in rods).

389-391. As an alternative (the projection) in cubit measure: the nine kinds of the projections should begin from half a cubit, and be increased by three *aṅgulas* (one-eighth cubit) up to one cubit and a half.

392. The projections of (the bases of columns for) buildings of the smallest, the intermediate, and the largest types should correspond to them (i e. should be the smallest, the intermediate, and the largest respectively).

393-396. If the expert architect should know and employ thus the sixty-four kinds of bases (*masūraka*) divided according to measurement prescribed in the science (of architecture), it would give all prosperity to the master of the building.

397-404. The bases (*kuṭṭima*) should be erected from above the pedestals in the surface of the ground floor of all buildings such as temples (*vimāna*), halls (*śālā*), pavilions (*maṇḍapa*), residences (*nidhāna*), dwellings (*sadma*), and gate-houses (*gopura*), etc.; further, they should be constructed in continuation of the (lower and upper) pedestals, and be on the same line with the pedestals and the upper pedestals: should this be done honestly and with devotion, the result would be prosperity together with fruition and beatitude.

405-412. All kinds of buildings of all storeys including the temples, if built without bases, there would result in the world the scarcity of rain, the death of the master, the loss of beauty, and (in fact) all kinds of losses; therefore, all buildings should be built together with bases, and the decorations should be furnished (especially) for the temples: (in that case) there would result enough prosperity, fruition, beatitude, long and healthy life, and all sorts of happiness.

Thus in the *Mānasāra*, the science of architecture, the fourteenth chapter, entitled:

The description of the bases of columns.

CHAPTER XV

THE COLUMNS

1–3. The characteristic features of all kinds of pillars will be stated now, (describing) in order their length, diameter, and (the application of) *āya* and other formulas, as well as the ornaments etc., the collection of wood, and the erection of pillars.

4–6. *Jaṅghā, charaṇa, stalī, stambha, aṅghrika, sthāṇu, sthūṇa, pāda, skambha. araṇi, bhāraka,* and *dhāraṇa*: these are the twelve successive synonyms (of the pillars) as stated by the ancients.

7–8. It (the height of the pillar proper) is (measured) from above the base (*adhishṭhāna*) to below the fillet (*uttara,* i.e. crowning fillet, *tema* or *benda*), and also from above the upper pedestal (*upapīṭha*) between the plinth (*janman*) and the crowning fillet (*uttara*).

9–10. The whole length of the pillar may be twice, one-and-one-fourth, one-and-one-half, or one-and-three-fourths of the height of the base.

11–13. The length of the pillar, which is up to twice the height of the base (*adhishṭhāna*), is stated in the cubit measurement: the twelve varieties of the height (i.e. length) of the pillar should begin from two cubits and a half, and end at eight cubits, the increment being by six *aṅgulas* (i.e. half-a-cubit)[1]:

14. The width of the pilaster (lit. wall-pillar) should be three, four, five, or six *aṅgulas* (*mātras*).

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[1] According to the *Suprabhedāgama* (XXXI-28) the most common proportion of pillar and base is two to one; but according to Kāśyapa the length of the pillar may be three times the height of the base, or six to eight times that of the pedestal (see the writer's *Dictionary*, pp. 646, 644).

15–19. The width (i.e. diameter) of the pillar (proper) should be twice, three times, or four times that (i.e. the width of the pilaster); as an alternative the height of the pillar being divided into twelve, eleven, ten, nine, or eight (equal) parts, each one (of these) may be its width which should be smaller by one-fourth at the top; such should be the width of the pillar [1].

19–23. Its shape is described here: the square pillars are known as *Brahma-kānta*, the octagonal pillars *Vishṇu-kānta*; the sixteen-sided or the circular pillars are known as *Rudra-kānta*, the pentagonal pillars are (called) *Śiva-kānta* and the hexagonal pillars *Skanda-kānta*; these shapes are stated to be (uniform) from bottom to top.

24–25. But the base (lit. bottom) of the pillars of these shapes may otherwise be square; as an alternative the base (lit. bottom), the shaft (lit. middle), and the capital (lit top) may also be square.

26–30. (When) the whole length of the upper portion (i.e. entablature) is equal to the portion ending at the neck (i.e. capital), and the middle portion (i.e. shaft), which is uniformly fluted, is equal to that (i.e. the combined height of the entablature and the capital) and is twice the lower portion (i.e. the base); and the remaining bottom portion (i.e. the pedestal), which should be made quadrangular in shape, is equal to the latter (i.e. the base); that pillar is called the *Chitra-kaṇṭha*; it should be employed in all kinds of buildings.

31–38. At its (pillar) bottom should be made either a base (*āsana*), or a pedestal (*pāduka*), together with a cyma (*ambuja*); decorative devices should be furnished as crowning mouldings to the bottom and bands as the lower mouldings to the top (i.e. capital or entablature when there is one); at the bottom should be beautifully furnished the bridge moulding (*pālikā*); the interval and the space two *aṅgulas* wide on all sides should be furnished with decorative bands (*paṭṭa*), that is, with bands decorated with leaves, jewels and flowers; and

[1] According to *Kāśyapa* the diameter of the pillar may be $\frac{1}{7}$th, $\frac{1}{8}$th, $\frac{1}{9}$th, or $\frac{1}{10}$th of its height; if it be made of wood or stone $\frac{1}{3}$rd or $\frac{1}{4}$th of its height, or $\frac{1}{8}$th if it be a pilaster joined to a wall (see the writer's *Dictionary*, p. 644).

lotuses, leaves, etc. (should be furnished) at the forepart of the middle portion (i.e. shaft), buds at the upper and lower ends of the bottom (i.e. the base or the pedestal), and as at the bottom, buds should be furnished at the upper and lower ends of the top portion (i.e. capital or entablature); (thus) furnished with all ornaments the pillar is known as the *Padma-kānta* (Lotus-pillar).

39. The pillar (having all the aforesaid characteristics but) without the pedestal (*āsana*) at its bottom is called the *Chitra-skambha.*

40–43. The capital (*bodhika*)[1] and other (component) parts (of pillars) should be made in proportion to the length of a pillar; the lower parts (i.e. pedestal and base) of pillars should be proportionate to their width; their height may be equal to, three-fourths, one-half, or one-fourth of the width, as would make it beautiful in measure.

44–47. The height of the capital (*bodhikā*) together with that of the bridge-moulding should be one, two, three, four, or five rods; its length and width should be proportionate to its height; one or one-and-fourth rods should be the width of the capital.

48–49. The height of the warrior's neck (*vīra-kaṇṭha*)[2] should be one, three-fourths, or half a rod, and its diameter should be half of its width.

50–51. The height of the abacus (*phalakā*) should be one or three-fourths of a rod, and its width should desirably be two or three rods.

52. The lower portion (*nimnaka*)[3] should be equal to one-fourth of the length of the pillar.

53–60. The height of the pitcher (*kumbha*) should be one rod, half-a-rod, one-and-one-half rods, or two rods; the length of the

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[1] It also implies the crowning member of the capital, which is placed upon the abacus (*phalakā*) and under the table of cornices (see the writer's *Dictionary*, p. 441-442).

[2] This member is generally marked by a human figure and is placed between the corbel (*bodhikā*) and the abacus (*phalakā*).

[3] This is otherwise called *kaṇṭha* or neck and is placed between the abacus and the pitcher.

pitcher (*kumbha*) above the straight neck (*kaṇṭha*) should be equal to the neck (itself); equal to that should be the height of the fascia (*āsya*) of the tenia (*tāṭika*) in particular; (and) the length (of this member) is stated to be one-and-one-fourth, or one-and-one-half rods; the height of the cyma (*padma*) below should be made equal to the height of that, and its length should be one and one-fourth rods; the bead (*hārikā*) should be half of its (the cyma's) height, and its length below (the cyma) should be the same number of rods; the height of the tenia (*tāṭikā*) which is equal to its (the bead's) width should be one rod.

61. Below (that) should be made an ornament like the pitcher (*kalaśa*) extending up to the corbel (*vīra*).

62. At the top should be beautifully made an ornament resembling the heavenly flower.[1]

63. Below that the lower band (*mūla-bandha*) together with lotuses should be made covering (the space of) one-and-a-half rods

64. The lower portion of that also should be ornamented with strings (*dāma*) of pearls in particular.

65. (All) these are the ornaments for the upper portion; those for the lower portion are now stated.

66-67. The height of that base (lit. root of the pillar) should be one rod and its width two rods; it should be made of the lotus-seat (*padmāsana*) type, and be furnished with the images of demons and lions, etc.

68. Below that should be made a pitcher (*kumbha*) of one or two rods (height.)

69. Above the lion should be a band (*paṭṭa*), a cyma (*padma*), or a beam (*gopāna*).

70-72. It (the whole base) should look like a bridge (*pālikā*), and the rest should be constructed in accordance with one's taste; the

[1] This is otherwise called *mandara*.

bridge moulding (*pālikā*), etc., should otherwise be constructed at the (bottom): this (pillar) is called the *Pālikā-stambha* (Bridge-pillar).

72-74. The *Kumbha-stambha* (Jug-pillar) is described here: the height of the bridge-moulding (*pālikā*) at the foot of the pillar (*pāda*) is desired to be one rod, and its width two rods.

74-75. The height of the pitcher (*kumbha*) should be two rods, and its width three rods; and half of that (i.e., one rod) should be the height of the fascia (*āsya*).

76. At the forepart (top) of this pillar should be furnished the vestibule (*nāsikā*) and the cage ornament (*pañjara*).

77. The spear-like ornament (*śakti-dhvaja*)[1] should be one rod, and the height of the vestibule (*nāsi*) two rods.

78-80 Equal to that (i.e. two rods) should be the connecting fillet (*vihṛita*)[2], the height of the neck should be one rod, and its width two rods; below that is stated to be the cage-ornament (*pañjara*) of which the height should be two rods and the width one rod.

81-82. Below that should be constructed the warrior's neck (*vīra-kaṇṭha*) in such a way as would make it look beautiful: its height should be equal to the width of the pillar, and its (own) width equal to that (height).

83. Below that, the abacus (*phalakā*) and other members should be constructed in order as before.

84. The Jug-pillar (*Kumbha-stambha*) is thus described; the *Koshṭha* (compartment) and other pillars will now be described.

85-86. The compartments (*koshṭhaka*) at its (the Compartment pillar's) two sides should conform to the straight-shape of the pillar; and its cage-ornament (*pañjara*) and fillet, and other mouldings should

[1] This is a projecting ornament looking like an emblematic spear; it is placed above the vestibule (nose).

[2] This is a moulding placed between two others: in this respect it serves the purpose of a fillet.

conform to the shape of the space covered by the compartments (*koshṭha*).

87-88. The cage and other ornaments should be made at the foot and top of the compartments (*koshṭha*), but (in measure) they should be made proportionate to the diameter of the main pillar.

89. The cage (*pañjara*) should be made of two rods, and the neck (*gala*) above half of it (i.e. one rod).

90. Above that the vestibule (*nāsika*) and the spire (*śikhara*) should be made of two rods.

91. The height of the small dome (*stūpikā*) attached to the large vestibule (*mahā-nāsikā*) should be half of that (i.e. one rod).

92-93. As an alternative, the height (i.e. length) of the main pillar (*mūla-pāda*) should be divided into ten, nine, or eight equal parts: of these, the (total) height of the ornaments (*bhūshaṇa*) above the compartments (*koshṭha*) should be three parts.

94-96. That (i.e. the same) height being divided into five parts, one part should be given to the height of the cage (*pañjara*); equal to that (i.e. one part) should be the height of the neck (*grīva*), and twice that (i.e. two parts) should be the height of the vestibule (or nose); half of that (i.e. one part) should be the height of the small dome (*stūpi*), and the forepart of the vestibule (*nāsikā*) should be equal to that (i.e. one part).

97-98. The width of the cage (*pañjara*) and the other ornaments should begin from two rods and end at ten, the increment being by one; what remains above should be (given to) the small pillar.

99-104. The height of the cage-like member (*pañjara*) being divided into nineteen parts, two parts should be the height of the crowning fillet (*uttara*), and one part the height of the lower fillet (*vājana*); above that the cyma (*padma*) should be two parts, and the fillet (*vājana*) one part, the height of the corona (*kapota*) should be eight parts, and the fillet (*āliṅga*) above one part; equal to that should be the interval

(*antarita*)[1] above, and the height of its crescent-shaped moulding (*pratika*) should be two parts ; above that the fillet (*vājana*) should be one part, and the rest should be made according to one's discretion.

105-106. The height of the neck (*grīva*) being divided into three parts, the height of the platform (*vedikā*) should be one part ; the height of the neck (*grīva*) proper should be one-and-one-fourth parts, and the remaining parts should be for the neck ornaments (*bhūshaṇa*)[2].

107-110. There should be seven parts above the platform (*vedikā*), and the height of the upper neck (*gala*) should be four parts and a half ; above that the fillet (*kampa*) should be one part, and the height of the cyma (*padma*) one-part-and-a-half ; above that the fillet (*vājana*) should be one part ; as an alternative, the length being divided into three parts, the middle porch-like moulding (*madhya-bhadra*) should be one part, and the compartment (*prakoshṭha*) should be discreetly made of the remaining parts) at the middle.

111-113. The height of the neck ornaments (*grīva-bhūshaṇa*) should be divided into six parts: (of these) two parts should be the height of the crowning fillet (*uttara*), and the lower fillet (*vājana*) should be half of that (i.e. one part) ; the height of the separating-moulding (i.e. the band) of the neck (*gala-bhit*) should be two parts, and of the fillet (*vājana*) one part.

114. The upper fillet (*uttara*) of the middle compartment (*madhya-koshṭha*) should be the same (i.e., one part), and the two small pillars (*kshudra-pāda*) should be beautifully decorated.

115-116. The cage-like moulding (*pañjara*) on the length of the crescent (*prātika*) being divided into eight parts, the height of the small platfrom (*vedikā*) should be seven parts, and the fillet of the cyma (*padma-vājana*) one part.

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[1] Or string-courses carved with the rail pattern (see the writer's *Dictionary*, pages 565, 567.)

[2] Generally the neck is not further divided as here (see Ram Raz's Essay, plate VI, and Gloss, Grecian and Roman Architecture, plate XV.)

117. The length of the platform (*vedi*) should be four parts, and the width of the neck (*grīva*) three parts.

118. The length of the (upper) vestibule portion (*nāsi-śālā*) should be made equal to the length of the platform (i.e., four parts).

119-120. Of this length (of the upper vestibule) the width of the middle vestibule (*madhya-nāsi*) should be one-third, and the height of the middle vestibule (*madhya-nāsi*) should be half or three-fourths of its width.

121-125. The height of the several vestibules (*nāsi*) at the two sides should be equal to the height of the spire (*śikhara*), and its finial (*śikhā*) should extend to the crowning fillet (*uttara*) and be furnished with the female crocodile (*kimbarī*) face; the vestibule (*nāsi*) at the middle should be furnished with leaves, and the small (vestibule) with drips; the middle vestibule (*madhya-nāsi*) above the head (*śiraḥ*) of the bands (*paṭṭikā*) should extend up to the finial (*śikhā*); and this head (*śiras*) should have a fillet or awning at the upper end.

126. Above the spire (*śikhara*) the height of the band (*paṭṭa*) should be equal to the height of the crowning fillet (*uttara*).

127-128. Above that should be (in order) the fillet (*vājana*), the cyma (*padma*), the drip (*nimna*), and the pitcher (*kumbha*) with a staff, the cyma (*padma*), the fillet (*vājana*), and the cyma (*padma*) furnished with buds at the forepart.

129-130. These are stated to be the three domes (*stūpi*); they should be made of symmetrical parts; (and) the head (*śiras*) should be decorated with leaves and creepers, etc.

131-132. The caged hall (*pañjara-śālā*), one cyma (*padma*), and three finials (*śikhā*) should be decorated with all ornaments by the carpenter.

133-135. Above the column should be constructed an arch-ornament (*toraṇa*) or a fillet (*vājana*), and its height by the width of the main pillar should be one rod; measuring as aforesaid, the crowning fillet (*uttara*) and the other ornaments should be made.

136. Above that at the end of the arch (*toraṇa*) the crocodile pattern (*makara-patra*) should be constructed.

137. Above that at the end of the arch (*toraṇa*) should be one rod for its head (*śiras*).

138. It should be furnished with the female crocodile face, and be adorned with all ornaments.

139-141. The two sides of the compartment (*koshṭha*) should be furnished with small pillars; the width of the small pillar should be three-fourths of the width of the main pillar; by the width of that pillar should its ornaments be made.

142-143. The warrior's neck with the abacus and other mouldings at the top and bottom should be of one rod: it should be made without the capital, and be furnished with the abacus and other ornaments.

144. The length of the abacus should be two rods, and the width of the pitcher one-and-a-half rods.

145-146. The tenia (*tāṭi*) and upper fascia (*vaktra*) should be one-and-one-fourth parts, the height being divided as before: all the ornaments should be gracefully fitted thereon.

147. A fillet (*vājana*) should be constructed at the forehead (*lalāṭa*) part of the upper end of the height of the capital (*bodhikā*).

148. Similar fillets (*vājana*) should be made at the end of the pillar, and also at the two sides, and covering the fascia (*mukha*).

149. At the lower part an ornament shaped like the middle portico (*madhya-bhadra*) should be constructed of one-third (of the whole height).

150. At its two sides the projection of the neck is desired to be made of one part.

151. The fascia at the bottom of the fillets (*vājana*) at the two sides should be shaped like a club (*vajra*).

152. The small fillets (*vājana*), etc., should be made symmetrical to the upper (i.e. crowning) fillet (*vājana*).

153. The middle portico and other ornaments should be made at the two sides on the top of the pillar.

154. The drip (*nimnaka*) should be made on the two sides and middle at the bottom of the staff of the neck (*kaṇṭha-daṇḍa*).

155. The wave-ornament should be made on the capital (*bodhikā*) and it should be decorated with all other ornaments.

156-158. The same height being divided into twelve parts, the wave-ornament (*taraṅga*) should be made of three parts at the bottom; above that the height of the capital (*bodhikā*) should be six parts in particular.

159. The smiling face resembling the serpent's fang should be furnished with floral ornaments.

160. Above that at the top of the head (*śiras*) the bead (*hārikā*) should be of one part.

161. The height of the head up to the end of the crowning fillet (*vājana*) should be one or three-fourths of a rod.

162-163. The upper part (of the pillar) looking like the young plantain stalk and resembling the flames of fire should project from that (part) both lengthwise and breadthwise.

164. At the forepart the wave-ornament (*taraṅga*) in continuation of the neck should be either equal to or greater than the neck-(*gala*).

165. The painting (*chitra*) extending from the bottom to the top of the forehead (*lalāṭa*) should be one part.

166. Above that, in the neck (*kaṇṭha*) part should be (in order) the ear, the fillet, the cyma, and the fillet (*karṇa-kampa-abja-vājana*).

167. It should be decorated with leaves and creepers, etc., and also with jewels, leaves, and paintings.

168. And it should be adorned with all (other) ornaments: this is called the *Pushpa-bodhika* (flower-capital).

169. (In another type of pillar) something like a pedestal and the staff (i.e. shaft), etc., should be made (as before).

170. It should be decorated with small fillets (*kampa*), cymas (*padma*), and jewelled flowers.

171. There should be the wave ornament (*taraṅga*), the staff (*daṇḍaka*), the capital (*bodhikā*), and the bridge-ornament (*pālikā*).

172-173. Therein should be made in accordance with the capacity (i.e. size) one, two, three, four, five, six, seven, or eight fascia.

174-175. Below that should be the warrior's neck (*vīra-kaṇṭha*), furnished with the abacus (*phalakā*), the capital (*bodhikā*), and the interval (*antarā*); and it should be furnished with the images of lions, etc., for beauty as well as for support.

176-179. The height of the warrior's neck (*vīra-kaṇṭha*) being divided into nine parts, (its) pedestal (*pāduka*) should be made of one part, and the assemblage of the other ornaments (*saṁgraha*) of five parts; above that should be made the bead (*hārikā*) of one part, and the cyma (*padma*) of one part; above that the fillet (*vājana*) should be of one part; and the assemblage of the ornaments should be furnished with two fascia (*vaktra*).

180. The line from top to bottom should be decorated with ornaments like the forepart of the cyma (*padma*).

181. It should be adorned with jewelled leaves, and the rest should be discreetly constructed.

182. The features of the assemblage of ornaments (*saṁgraha*) are thus described; they were formerly attached to the warrior's neck (*vīra-kaṇṭha*).

183-185. Its (the warrior's) face should be made out of the foot part (of the pillar), and below (the face) it should be as if with uplifted arms; the same part (of the pillar) may be decorated with

representations of the lion, etc., or with ornaments like the theatre[1]; this should be the fist band (*mushṭi-bandha*)[2].

185–187. The height of the abacus (*phalakā*) being divided into three parts, the height of the upper joint (*utsandhi*) should be one part; below that the projection (*kshepaṇa*) one part, and below the latter the cyma (*abja*) one part; or the (upper) half-portion may be one part and the cyma (*abja*) two parts.

188–190. The height of the pitcher (*kumbha*) being divided into eight parts, its cyma (*padma*) and fillet (*kampa*) should (each) be of one part; the lower and upper portions of the pitcher should be ornamented with banyan leaves, etc.; its drip (*nimna*), tenia (*tāṭikā*), and such other ornaments should be fittingly constructed as stated before.

191–192. In each kind of the *Kumbha-stambha* (pitcher-pillars); as well as in the Compartment pillar (those members should be made) for all (buildings) the *Kumbha-stambha* (pitcher-pillars) are thus described by the ancient (architects).

193–196. Of the seven parts of height, (in another variety of pillars), above the earth, the platform (*mañcha*) should be of three parts, and the neck (*gala*) above one part, the abacus (*phalakā*) two parts, the hall-part (*śālā*), the head (*śiras*), and the pitcher (*kumbha*) one part each, and the cage (*pañjara*), etc., should also be constructed in order.

197–200. There should be five upper parts in the aforesaid height, (namely), two parts, three-fourths part, one and a half parts, and three-fourths part: these five parts should be (the measures, respectively,) of the neck (*gala*), vestibule (*nāsikā*), the facia (*ānana*), and the pitcher (*kumbha*), which are the upper ornaments of the pillar attached to the pitcher.

ORNAMENTS OF THE PITCHER

201. I shall now specially describe what are called the ornaments of the pitcher.

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[1]It is sometimes used as a crowning moulding or the part of the capital which supports the abacus (see the writer's *Dictionary*, page 316).

[2]This type of band is not included in the various types of bands of which details are given elsewhere (see the writer's *Dictionary*, pages 20—41).

202–207. The height of the bridge ornament (*pālikā*) at its (the pitcher's) base should be divided into six parts: (of these) the pedestal (*pādukā*) should be one part, and the height of the cyma (*padma*) equal to that (i.e. one part); the fillet (*kampa*) above that should be half a part, and the neck (*kandhara*) two parts; above that the fillet (*kampa*) should be constructed of half a part, and the cyma (*padma*) of one part; as an alternative, the fillet (*kampa*) may be above and the cyma (*padma*) below made of one part (each); the (lower) neck (*kaṇṭha*) should be made of one part, and the rest should be as stated before.

208–211. Of the same (number of parts), the cyma (*padma*) above should be half a part, and the corona (*kapotaka*)[1] above that one part; the fillet (*vājana*) above should be made fittingly of half a part; above that, at the base of the pitcher (*kumbha*) the bridge-moulding (*pāli*) should be one part, and the cyma (*padma*) one part; above that the fillet (*kampa*) should be half a part, and the rest should be discreetly made with their fitting shapes.

212–219. Above that the height of the fascia (*vaktra*) being divided into nine parts, the plinth (*janman*) should be half of the pitcher (*kumbha*), and the fillet (*vājana*) should be half a part; the cyma (*padma*) should be made of one part, and the fillet (*kampa*) of half a part; the height of the neck (*gala*) should be two parts and a half, and the fillet (*kampa*) half a part; equal to that (i. e. half a part) should be the height of the cyma (*padma*), and the corona (*kapotaka*) should be made of one part and a half; the crescent (*prati*) should be made of one part, and (the whole) should be furnished with all ornaments; as an alternative the height of the neck (*kaṇṭha*) should be two parts, and the cyma (*padma*) one part and a half; as another alternative the height of the fascia (*vaktra*) should be made of one rod.

220–221. The bridge-ornament (*pālikā*) should be gracefully made as directed before; above that (bridge-ornament) a bud-like ornament should be made of half a rod.

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[1] For a detailed account of this moulding see the writer's *Dictionary*, pages 109-110.

222–223. The projection should then be extended from the end of the pitcher (*kumbha*); inside the pitcher (*kumbha*) a jewelled band (*bandha*) and partly-shown (lit. mysterious or secret) cloth (*vastra-nipya*) should be made.

224. The base of the pillar should be decorated with all ornaments.

225–226. Then at the end of the pitcher (*kumbha*) should be made the fascia (*āsya*) resembling something like the projection, and the vestibule (*nāsikā*); as an alternative, the vestibule (*nāsikā*) may be omitted, and it (the fascia) may be constructed above the cage-like ornament (*pañjara*).

227. The upper portion of the pillar ending by the bridge-ornament (*prati*) should be decorated with lotus (and) creeper patterns, etc.

228–229. It should be equal to or three-fourths of the main pillar in diameter, this is called the pillar of the pitcher; there should be fitted the interval (*antarāla*).

230–231. It (this pillar) should be made in the exterior, interior, or the interval, as also against the wall, on the topmost part, and the head-part (of a building) in particular.

232. The best architect should furnish it with large cages (*pañjara*), and such other ornaments.

(THE GENERAL FEATURES OF THE COLUMNS)

233. The general features of the pillars are now stated: the height, etc., should be made as before.

234–235. The diameter of the attached (*saṁyoga*) pillars, (i. e. pillars in pair) may be three-fourths, or half of that of the main pillar; but the proportion which would make it look beautiful should be followed.

236–237. The capital (*bodhikā*) up to the abacus (*phalakā*) should be measured according to the main pillar, and the bridge

(*pālikā*) and all other component mouldings should be measured in accordance with the minor pillar[1]

238. The capital (*bodhikā*) and other component members should be made as before.

239. All the minor pillars should be attached to the main pillar.

240-241. The minor pillars surrounded by subsidiary pillars should be attached to the base of the main pillar: they may be three-fourths, half, or any other fraction of the main pillar.

242-243. The main pillar may be furnished with one, two, or three minor pillars; the number (of minor pillars) is thus stated; their base should be shaped like the lotus-seat (*padmāsana*).

244. When it (the main pillar) is furnished with four minor pillars it is called the *Brahma-kānta*.

245. When it is furnished with five minor pillars it is called the *Śiva-kānta*.

246. When it is furnished with six minor pillars it is known as the *Skanda-kānta*.

247. And when it is furnished with eight minor pillars it is called the *Vishṇu-kānta*.

248-249. All these pillars are furnished with the bridge (*pālikā*) at the base instead of the pedestal; or an image of the lion should be made therein, and the pillar should be adorned with leaves and such other ornaments.

250. The wise (architect) should get (the pillar) made with stone or wood, as stated (by the ancients).

Collection of wood

251. The collection of wood will be described (first), and afterwards the details of the wood will be stated.

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[1] Compare *Suprabhedāgama* (XXXI-56) quoted in the writer's *Dictionary* (page 647, see also page 648).

252–256. Wood should be collected during the southern or the northern solstice, and preferably during the four months beginning with *Māgha* (January and February); the chief architect (*sthapati*) accompanied by the workmen (*sthāpaka*) should collect wood on an auspicious moment of the auspicious conjunction (*lagna*) in an auspicious day during the dark fortnight; they should be furnished with axes, clubs, and swords, and other instruments, and be covered with the safety-string (*rakshā-sūtra*).

257–259. The wise master should fast overnight drinking only pure water (or milk), and getting up in the morning with his retinue should try to see some good omen on the way to the forest.

260–265. The wine-glass, meat, the bull, a jug full of water, an elephant, a courtesan, and an assemblage of the twiceborn, mirrors, flower garlands, a king, a swing, an offering, a filled up pot, a fort, an umbrella, a washerman carrying clothes, the auspicious all-producing cow, and wealth, corn, and prosperity: all these are auspicious omens, if they are seen in front.

266–269. People with loose hair or without nose, the oil pot, a single Brāhman, a single ascetic, people wearing a skull or red clothes (? menstruous women), people suffering from consumptive phthisis, people of defective or excessive limbs: all these are known as the inauspicious omens, when seen in front on the road.

270–271. The skylark, the owl, the dancer, the ascetic practising breathing, and a great inspired female are auspicious when seen on the left side, but inauspicious when seen on the right.[1]

272–276. The crow, the peacock, the long-tailed, the black-winged, the white-eyed, the lizard, the leech, the snake, the crane, the tiger, and the fox: if these pass from right to left, it is auspicious; if they pass from left to right, it is certainly inauspicious.

[1] Both ब्यानक and दासोस्मर are of doubtful sense, the latter may have analogy with जातिस्मर meaning one who can recall the conditions of former life.

277-281. The owl, the vulture, the wild white-eyed, the deer, the hare, the path-worm, the vulture of variegated colour, the blood-hound, and the boar: if these pass from right to left it is certainly auspicious; if they pass from left to right, it is certainly inauspicious.

282-284. I shall also speak about the remedy in case there be (seen) no auspicious omens at the boundary of the village; the wise (architect) should then proceed on (the journey) after having seen (the bad omens) and feed the Brahmans; if there happens to be any inauspicious omen at the village boundary, an animal should be offered as sacrifice.[1]

285-287. If any or all of the aforesaid (animals) pass near the forest from left to right, or from right to left, and be seen on the way while passing, it is certainly auspicious.

288-289. After reaching the forest, they should find out some tree casting pleasant and cool shade, and should rest there and try to hear some (auspicious) sounds of birds.

290-291. The snake, the skylark, the white-eyed, and the big bird: if these make some sweet sound, it is auspicious, but in case of ominous sound, beasts should be offered as sacrifice.

292-294. The crowing of the crow on the south is most auspicious, and on the east fair, but from the north it is said to be the worst; if by chance it is heard the offering of three goats should be made on the sacrificing pole.[2]

295-299. Thereon the wise architect should endeavour to make sacrificial offerings as aforesaid: to (the evil spirits known as) *asuras*, *rākshasas*, *bhūtas*, and *piśāchas*, *charagī*. *vidārī*, *pāpa-rākshasī*, and the eight great quarter masters beginning with *Indra* and ending with *Iśāna*: to all these the sacrificial offerings made with a mixture of blood should be offered, and prayers should always be said.

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[1] The text is clumsy, it is unavoidably necessary to supply a negative particle in line 282.

[2] The following lines 295—422 are read in different sequence in the various texts (see note under text).

300-304. To *Mukhya, Mṛiga, Aditi, Udita, Vitatha, Antariksha, Bhṛiśa,* and *Pūshan* : to all these as well as to the *rākshas* (demons) the offering of meat and rice should be made; and the chief architect (*sthapati*) should make the offering of fruits, milk, and rice to the forest god and others by (mentioning) their own names.

305-306. Thereafter the purification ceremonies should be performed, benediction should be pronounced, and auspicious utterance should be made, and afterwards the Brahmans should be fed.

307. The lord of the forest should go out at the time of the cutting of the wood.

Incantation (in this connection):

308. Om, I bow to the protector of the master and also to the *rākshas* and the *bhūtas*.

309-310. Thereafter the chief architect together with the master should make offerings to Brahmā, and the master should make the sacrifice with fire, and worship the forest gods.

311-313. The chief architect should stand facing the east or the north and wash the axe, and the expert carpenter, the architect, taking the axe from the hands of the master should hew the wood together with other followers.

314-316. That tree is known as female which gives cool and pleasant shade, of which the trunk is large and the top is thin, which has no sprouting horn but of which the appearance is pleasant, and which has branches looking like an open umbrella.

317-318. That tree is called male which is of uniform width at the root, trunk, and top; which has no branches; of which the appearance is pleasant, and which is cool.

319-321. That tree is neuter which is thicker at the top and thinner at the root, which has many shoots and branches, which is too heavy to stand erect, of which the head is severed, which is hot and has spreading branches, and of the lower part of which the eunuch is an example.

322. The male and the female trees should be hewed down at an auspicious moment of an auspicious conjunction (*lagna*).

323-328. It is inauspicious if the tree does not fall down by jumping upwards, or if it falls towards the east or the north ; but it is auspicious if the tree falls towards the south or the west ; it brings forth all prosperity if the tree falls also towards the north-east or the south-west ; but the reverse would be the result if the tree falls towards the south-east or the north-west, or at the intervening quarter; if it lifts upwards before falling finally, everything turns out inauspicious.

329-330. At the falling of the hewn tree if the bull, the horse, or the elephant roar, it is the best omen, but it is inauspicious if other animals roar.

331-332. If the neighbouring trees fall by being pressed down by the tree to be cut, bad luck comes on the man (master).

333-334. The aforesaid order does not apply if the tree falls towards the east or the north-east, but as to other order (directions), it is inauspicious.

335-339. The wise (architect) should perform some propitiatory rite in order to remedy all kinds of defects, (i.e., the bad omen) etc., (the remedy consists) in performing sacrifice with animals and in feeding the Brahmans thereafter; if a propitiatory rite be performed, all defects must be removed; and not otherwise. The death of men occurs, if the propitiatory rites be not observed to avert evil ; the wise architect should, therefore, carefully try to avoid such things, and should then collect the wood.

340. Broad nails (should be driven) into all parts of the tree when it is kept lying flat.

341-346. Keeping the foot on the ground the disc (mark) should be made on the wood while it is kept lying flat, and thereafter it should be placed on a waggon ; and it should be covered over with new cloths amidst auspicious sounds ; then it (the waggon) should be pulled by two bulls, buffaloes, or elephants, or men, on an auspicious moment of an auspicious conjunction (*lagna*) ; reaching the workshop (of the architect) it should be taken out of the waggon.

347. The collection of wood is (thus) stated, its varieties will now be described.

348–359. The *dhūmaka* (smoky tree), *kshīriṇī* (milk tree), *khādira* (a tree of Acacia catechu class), *khadira* (Acacia catechu), *śāka* (a tree), *nimba* (Azadirachta Indica), *śami* (Mimosa suma), *śākhā* (sal), *mṛiga* (deer-tree): these are the trees which are used as supports (for a building); the trees which are sawed (into planks) are stated here: the *khadira* (Acacia catechu), *kṛitamāla* (Cassia fistula), *vyāghraka* (tiger-tree), *āchchha dana* (a tree), *mṛiga* (deer-tree), *drākshā*, *śākha* (sal), *rudra* and *jambuka* (rose apple tree): these trees are employed in a recumbent (horizontal) posture; the cocoanut, *tāla* (palmyra tree), *veṇu* (bamboo), *mauni* (species of trees)[1], *kiṁsuka* (Butea frondosa), *pūga* (Areca catechu) *pushkala*, *amalaka* (Emblica officinalis), *kiṁsiri*, *harita* (? yellow myrobalan tree), *saptaparṇa* (Alstonia scholaris): all these are known as the trees which are employed (as poles or pillars) in an upright posture; these should be employed in temples and especially in human dwellings; the strongest (*vyāghra*) red sandal, sandal and similarly tamarind and all other trees (wood) should be employed in the houses of the twice-born; if all these species be wanting one species should in all cases be used.

360–361. The lower part of a tree should be used for the base (of the column), and its upper part should be for the capital; the part other than these (i.e. the middle part) is known to be that which touches (i.e. makes) the body (i.e. shaft of the column).

ERECTION OF COLUMNS

362. The erection of pillars in all kinds of buildings, namely, temples and others, is now described.

363–364. All pillars should be erected at a uniform distance (from one another); if one pillar be attached at the end of another pillar the (very) object of building will be destroyed.

365. The lines drawn by the inner and outer sides of the building (wherewithin are erected columns) should be straight lines.[2]

366–367. The inter-columnation should be (measured) from the centre of (two) pillars; from the outer extremity (of pillars), and from

[1] Including Agati Grandiflora, Buchanania, Latifolia, Butea Frondosa, Terminalia Catappa, Artemisia Indica, and the mango tree.

[2] It really means that columns, when in rows, should be in a straight line.

the inner extremity (of pillars); there would be no defect if in accordance with the practice in a country it is (measured) half a diameter.

368-371. The erection (*āvāhana*, lit. invokation) of the column should be performed at an auspicious moment of an auspicious conjunction (*lagna*) on an auspicious day of the bright fortnight in the months of Pushya (December and January), Chaitra (March and April) and Vaiśākha (April and May), during the northern solstice, or in the months of Āshāḍha (June and July), Śrāvaṇa (July and August), Āśvī (September and October), and Kārtika (October and November), during the southern solstice; but in case of want (i.e. necessity), this may be performed during the other months also.

372-373. All the ceremonies from the commencement (*ankurārpaṇa*) to the end of erection (of the pillar) should duly be performed (including) the washing (of the column) with water; and the preparation of the site should be carried out.

374-377. In connection with pillars erected in the north-east, or the south-west corner, or in the interspace, above that part (i. e., the base) of these pillars which is the (real) strength of the building, a supporting slab should be made of one, one-and-one-half, or two rods, and its thickness, width, and length should be as one likes.

378-381. For the stone pillar, the supporting slab should be made of stone, and for the wooden pillar it should be of wood; but as an alternative all the supporting slabs may be made of stone, and they should be square (four cornered) in shape; a supporting slab (generally) should be one, two, or three cubits broad; in the centre of the base (*ādhāra*) there should be a recess to insert jewels therein.

382-385. A porch (or pavilion) should be constructed in front of the main building; at the point where the porch ends a column should

[1] There seems to be no fixed inter-columnation, but it may be two, three, four, or five diameters; architects are allowed to exercise their discretion, but they are required to be particularly careful with regard to beauty and utility (see the writer's *Dictionary* under *Stambha*, p. 645).

be posted by holding it up; a *chaṇḍita* plan (of sixty-four plots) should be marked covering a *sthaṇḍila* plan (of forty-nine plots),[1] with the (powdered) seed of *vrīhi* and other grains, and therein a pillar should be erected facing the west or the north.

386. As an ornament a jug (to be placed before the pillar) should be covered with new cloths and be decorated.

387-388. The *śirīsha* (Acacia sirissa), and other grains, and the seed of cotton should be wrapped inside a piece of cloth with some string, and thereafter be tied to the ear of the pillar.

389-394. In front of it (i. e., the pillar to be erected) a *sthaṇḍila* plan should be marked with pure (powdered) rice (*śāli*) and fried grain (*lāja*), and the *kuśa* grass should be spread on it with their tips towards the east or the north; in the same way the aforesaid plans (known as) *pīṭha* or *upapīṭha* should be marked; thereon the wise (architect) should place for worship the jug (mentioned above) completely filled with water, and covered over with string, leaves, grass, and new cloth, etc., and in front of it a *sthaṇḍila* plan should be marked and jewels, iron, etc., should be brought in there.

395-397. The wise architect should wash his feet and perform the *āchamana* rite (washing the mouth, etc., with some incantation), and should make a trident mark on his forehead with holy ashes or sandal; thereafter the winding up (*sakalī-karaṇa*) ceremony should be performed, and benediction should be caused to be pronounced (by Brahmans).

398-404. Brahmā and all other gods should be worshipped at the place where the pillar is to be erected; the deity of one's own heart should specially be worshipped (supposing Him to be) installed in the jug; all the female deities should be invoked over the water of the jugs; after invoking and worshipping (all those deities) with perfumes, flowers, and entire unhusked pounded rice (*akshata*), etc., the (closing) ceremony called *ratnādhivāsana* (showing precious stones) should be performed by addressing all those deities by their own names;

[1]See the details of those plans under chapter VII (pp. 33, 37-38).

they (the deities) should be worshipped with perfumes, flowers, and burning of incense, and with dishes, etc., and (lastly) the wise (architects) should also perform the holy sacrifice with fire in front of them towards the east[1]

405–409. Thereafter the architect should proceed to the pillar and touch its base ; he should tie it with four strings coloured with *gairika* (a kind of red chalk, ochre) ; he should offer (to it) a gold-needle, together with *kuśa* grass, clarified butter, and dried milk; and thereafter he should worship it with incense, light, perfumes, and flowers, and (lastly) he should meditate on the pillar (thinking) it to be as (strongly posted as) the Himalaya mountain, and touch it with his hand.

410. The best teacher (i.e. architect) should then carry out the *adhivāsana* ceremony for the pillar.

411–423. Thereafter (the architect), getting the chief carpenters to raise the pillar with their hands, should circumambulate the building together with his own followers, amidst all auspicious sounds should reach the place where the pillar is to be erected, dismount it from the hands in the west, and place it in the pit made for the purpose ; (thereafter) they should go round the pit and insert into it the jewels used for the *adhivāsana* ceremonies : gold should be inserted at the centre and copper in the east, iron should be inserted in the south and brass in the west, and silver should be inserted in the north, the ruby (*padma-rāga*) in the middle, the topaz (*pushpa-rāga*) in the east, the opal (*gomeda*) in the south-east, the sapphire (*mahānīla*) at the south and the emerald (*marataka*) in the south-west, the lapis lazuli (*sphaṭika*) should be inserted at the west and the coral (*pravāla*) at the north-west, the pearl (*mauktika*), at the north, and the diamond (*indra-nīla*) at the north-east.

424–425. The architect together with the workmen should post the pillar thereon amidst the pronouncement of benediction and all other auspicious sounds by the Brahmans.

[1] There are three classes of worship: the first class one comprises sixteen items (*shoḍaśopachāra*) as distinguished from the two inferior ones *daśopachāra* with ten items and *pañchopachāra* with five items.

426-429. (Thereafter) the architect should bring all the jugs of the *adhivāsana* ceremony, circumambulate the pillar, and sprinkle it with water (therefrom) by pronouncing the incantations ; then he should offer incense and lamp (light) to the pillar adorned with clothes and garlands, should worship it with perfumes and flowers, and present dishes to it (with the following incantations).

INCANTATIONS.

430-431. Oh pillar, Thou art the great Meru[1] mountain for this building ; may the sun, the moon, and all other gods protect thy high peak.

432. After having pronounced this incantation, the wise (architect) should apologise (for possible deficiencies in the worship).

433-435. The wise architect should in this way erect pillars for (all kinds of buildings such as) palaces (*prāsāda*), pavilions (*maṇḍapa*), auxiliary temples (*prākāra*), and gate-houses (*gopura*), the dwellings of the twice born, as well as of the subordinate castes.

435-437. The ancient sages and also Brahmā and other gods have prescribed the installation of the pillar ; if anybody omit it (the ceremonies) he must suffer some misfortune ; therefore, the best architect should not omit this (in the installation) of pillars ; the architect, the master, and the Brahmans, all concerned in the ceremony of erecting the pillar, should carry out the worship in accordance with the rules as stated before in connection with the erection of pillars in their own buildings, forts, etc.

Thus in the *Mānasāra*, the science of architecture, the fifteenth chapter, entitled :

The description of the columns.

1 To this fabulous mountain, the task of upholding the north is ascribed.

CHAPTER XVI

THE ENTABLATURES AND ROOFS

1. I will now briefly describe the rules concerning the entablature (and the roof) in this science (of architecture).

2-4. The six varieties of height of the uppermost portion (of the column) which is stated to be the height of the entablature are three-fourths of the base, equal to it, and greater by one-fourth, one-half, and three-fourths, and twice it.

5-7. As an alternative (the height of entablatures) for the buildings of gods (i.e., temples) and of the (four) castes (i.e., dwellings) is stated in cubit measurement: the six kinds of height of the entablature should begin from seven cubits and end at four cubits and a half, the decrement being by half a cubit.

8-9. These (six varieties of entablature) are employed in the buildings of the six respective classes, (namely), the gods, the Brahmans, the Kings (Kshatriyas), the crown princes, the Vaisyas, and the Śūdras.

10-13. As an alternative, the same six varieties of height of the entablature are stated to be half, or three-fourths of the height of the pillar, preferably equal to it, or greater by one-fourth, half, or three-fourths, or twice it; of these the best proportion is specially recommended.[1]

14-16. As another alternative, the expert architect may divide the height of the pillar into eight (equal) parts; (of these) seven, six, five, four, three, and two parts are stated by the great sages to be the six kinds of height of the entablature.

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[1] There is evidently some confusion: six proportions are proposed, but actually seven are given.

17. The height of all these varieties of entablature should extend to the region of the crowning fillet (*uttara*).

18-20. *Kapota*, *prastara*, *mañcha*, *prachchhādana*, *gopāna*, *vitāna*, *valabhī*, *matta-vāraṇa*, *vidhāna* and *lupa*: these are the synonyms (of entablature).

21. All the component mouldings in the height and all the other parts of the entablature are described here.

22-29. The expert (architect) should divide the height of (an entablature) into thirty-one (equal) parts; (of these) the height of the first fillet (*uttara*) should be three parts and a half, and the second fillet (*vājana*) one part; the height of the cornice (*valabhī*) should be four parts, and the fillet (*vājana*) one part and a half; as an alternative the height of the first fillet (*uttara*) may be three parts, and the second fillet (*vājana*) one part; equal to that (i.e., one part) should be the small cyma (*kshudra-padma*), and the large cyma (*mahā-padma*) above three parts; above that the fillet (*vājana*) should be one part, and the corona (*kapota*) seven parts; the fillet (*āliṅga*) should be one part, and the interval (*antarita*) one and one-half parts; the ovolo (*prastara*) should be two parts, and the fillet (*vājana*) one part and a half.

30-31. The part above the crowing fillet (*uttara*) should be of four, five, six, seven, and eight parts: the pillar outside the building may be either of these measures (parts).

32-33. The projection of the fillet (*uttara*) should be of such measurement as would make it look beautiful; the projection of this fillet (*uttara*) and of the (second) fillet (*vājana*) should be equal.

34. The projection of the cornice (*valabhī*) should be equal to or three-fourths of it.

35. Above that the projection of the fillet (*vājana*) should be symmetrically one-fourth of it.

36-37. The projection of the corona (*kapota*) should be equal to it, or the projection may extend outwards (to any other proportion),

that is, the projection may be made three-fourths, half or one-fourth of it.

38-39. The projection of the fillet (*ālinga*) should as well be made extending just outside the pillar; the projection to the interval (*antarita*) above should be similar or equal to it.

40-41. The projection of the crescent moulding (*prati*) should be equal to half, or three-fourths of it; at the top of the fillet (*vājana*) its projection should extend outside the pillar.

42-44. *Prati*, *prastara*, and so also *prati-vājana*, *anvanta*, *avasāna*, *vidhāna*, and *vidhānaka*: all these are stated by the learned to be the synonyms (of *prati*).

45. The *prati* is shaped like a petal, and the *vājana* consists of two parts.

46-47. *Vājana*, *kshepaṇa*, *vetra*, *paṭṭa*, *uttara*, *paṭṭikā*, *kampa*, *trika*, and *mada*, etc., and the *antarita* are synonyms.

48. *Tulā-daṇḍa*, *jayantī*, and *phalakā* are synonymous.

49-50. *Kapota*, *vaktra-hasta*, *lupa*, *gopānaka*, and *chandra*: all these are synonymous.

51-52. *Saṁgraha*, *mushṭi-bandha*, *maddala*, *uddhṛita-hasta*, *valabhī*, and *dhārana*: all these are synonymous.

53-55. Above that, all other mouldings such as *nāṭaka*, *anta*, *mṛiṇālikā*, *vallikā*, *patra*, *valli*, *chitrāṅga*, and *kulikāṅghrika*: all these are stated to be synonyms by the ancient great sages.

56-58. *Uttara*, *vājana*, *ādhāra*, *ādheya*, *śayana*, *uddhṛita*, *mūrdhaka*, *mahā-tauli*, *svavaṁśaka*, and the *ādhāra* (base) of *prachchādana* (roof): all these are said to be synonyms.

59-70. Of the same number of parts as before (i.e., thirty-one), the height of the crowning fillet (*uttara*) should be three parts; above that the fillet (*kampa*) should be of one part, and the height of the cornice (*valabhī*) equal to that (i.e., one part); above that something like the cyma (*abja*) should be made of nine parts, and the fillet (*vājana*) of

half a part; the band (*mushṭi-bandha*) should be two parts and a half, and the fillet (*vājana*) above one part and a half; the height of the stalk (*mṛiṇālaka*) should be two parts, and the dado (*kandhara*) above one part; the corona (*kshepaṇa*) should be constructed above that of one part, and the cyma (*padma*) should be equal to that (one part); above that the fillet (*vājana*) should be one part and be adorned with foliage and creepers; the stalk (*mṛiṇālikā*) should grow up from the plantain base (*stambha*) and be furnished with flowers; above that the base (*ādhāra*) and the band (*paṭṭa*) should be two parts each, and the fillet (*vājana*) half a part; the band (*mushṭi-bandha*) should be one part and a half, and the fillet (*vājana*) one part; above that the large fillet (*mahā-vājana*) is said to be two parts; the cyma (*abja*) below that should be half of that, and it should be beautifully fitted and fully ornamented.

71-76. (In the third variety) the height of the mouldings of the entablature of half the height of the pillar including those at the top and the base should be similarly measured: at the top the height of the crowning fillet (*āliṅga*) should be two parts; above that the fillet (*vājana*) should be one part, and the interval (*antarita*) three parts; the fillet (*kampa*) above should be one part, and the crescent (*prati*) should be made of two parts; and the fillet (*vājana*) above that should be one part: these should be the thirty-six parts of the height (of this type of entablature).

77-87. As an alternative (i.e. in the fourth variety); the height of the entablature being divided into thirty parts, the height of the crowning fillet (*uttara*) should be three parts, and the (second) fillet (*kampa*) should be made of one part; the cornice (*valabhī*) above should be two parts, and the fillet (*vājana*) one part; the corona (*kapota*) should be five parts, and the fillet (*āliṅga*) one part; the interval (*antarita*) should be made of two parts, and the drip (*nimna*) of half a part; above that the cavetto (*prati-vājana*) should be made of one part and a half; above that the dado (*kandhara*) should be two parts and the fillet (*vājana*) one part; above that the dado (*grīva*)

should be two parts, and the fillet (*vājana*) should be made of one part; the height of its corona (*kapota*) should be four parts, and the fillet (*āliṅga*) half a part; the interval (*antarita*) above should be one part, and the drip (*nimna*) should be made of half a part; and the ovolo (*prastara*) should be one part; and it (the whole) should be adorned with all ornaments.

88-93. (In the fifth variety) of the same number of parts (i.e. thirty, in the height of the entablature), the base (*mūla*) and the beam (*gopāna*) should be as before, and the crowning fillet (*vājana*) should be two parts; above that the height of the calyx (*kulik. āṅghri*) should be five parts; the peculiarity of this part is that it is decorated with the calyx (*nāṭaka*)[1] (and) the corona (*kapota*), the small vestibule (*kshudra-nāsi*), and with leaves and creepers, etc.; all the different parts of the entablature should be decorated with crocodiles, etc., and they should be furnished with sharks and bees, etc. and the rest should be made as before.

94-95. The width of the small vestibule (*kshudra-nāsa*) should be one, two, or half a rod, and its height should extend up to the limit of the beam (*gopāna*).

96-97. All the small vestibules should be symmetrical to the lower pillar; but that small vestibule which conforms to the corner pillar (*karṇa-pāda*) should be half of the forepart of the column.

98-107. (In the sixth variety) the height of the entablature being divided into twenty-six parts, the height of the crowning fillet (*uttara*) should be three parts, and the (second) fillet (*vājana*) above one part; above that the cyma (*padma*) should be one part, and the fillet (*vājana*) one part; the fist-band (*mushṭi-bandha*) should be three parts, and the fillet (*vājana*) one part; the height of the stalk (*mṛiṇālikā*) should be three parts, and the fillet (*vājana*) one part; the height of the band (*paṭṭikā*) should be four parts, and the fillet (*vājana*) one part; the fillet (*kampa*) should be half a part, the cyma (*padma*) one part, and the fillet (*vājana*) half a part; the corona (*kapota*) should be

[1] *Nāṭaka* and *kulikāṅghrika* are synonymous (see lines, 53—55).

four parts, and the fillet (*āliṅga*) half a part; the fillet (*vājana*) should be equal to that (i.e., half a part), and the interval (*antarita*) one part; and above that the cavetto (*prativājana*) should be made of one part.

108-110. Of the calyx, as also of (lit. together with) the base, the projection should be made a quarter (of their height); the outward projection of all (mouldings) above that should be (generally) half (of their height), or one, two, or three rods.

111-114. Images of the *bhūtas* (demons), *gaṇas* (groups of deities[1]), *yakshas* (demigods), *vidyādharas* (demigods), or of men should be carved at the theatre (*nāṭaka*) parts of the temples, etc.; images of the *yakshas* and *vidyādharas* should be carved in the (*nāṭaka* part of the) palaces of the kings; and in all other (residential) buildings the theatre (*nāṭaka*) part should be furnished with human figures.

115-116. All the fist-bands (*mushṭi-bandha*) should be made parallel to the columns; and the rest should be made as before, and be decorated with all ornaments.

117. (In the seventh variety) of the same number of parts of the entablature, the calyx (*nāṭaka*) in the upper part should be of the same number of parts.

118-119. (In the eighth variety) the height (of the entablature) should be eight parts more (i.e., thirty-four): of these the corona (*kapota*) should be made (as before), and the rest should be made as before. These are the eight kinds of entablature.

120. The entablature above (the column) is thus described; the roof (*prachchhādana*) will be described here.

THE ROOF

121-129. The features of the roof (*vrachchhādana*) and other members of all kinds of buildings beginning with the edifice are now

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[1] आदित्य विश्ववसवस्तुषिता भास्वरानिलाः ।
महाराजिकसाध्याश्च रुद्राश्च गणदेवताः ॥

described: it (the entablature) should extend up to the crowning fillet (*uttara*), the three-fold band (*trika*) or the corona (*kapota*), or just above the cornice (*valabhi*); and above that covering one part of the entablature (*prastara*) forming the roof (*prachchhādana*) a beam (*daṇḍa*) should be placed horizontally to the door, and above that (roof) should be the parapet staff (*jayantika*); it (*jayantika*) should be made of wood, stone or brick; or the parapet staff (*jayantika*) should be made of wood alone; otherwise if it be made of stone it should be attached to the beam; it may be similarly made of stone without (being connected with) the beam, but (in that case) there should be made a (connecting) plank (*phalakā*); this should be made in all (kinds of) buildings, especially in the temples.

130-132. With regard to materials it (the roof) may be of three kinds: *śuddha* (pure, unmixed), *miśra* (mixed), and *saṁkīrṇa* (amalgamated). When it is made of one material it is known as *śuddha*, when made of two materials it is *miśra*, and when made of three (or more) materials it is *saṁkīrṇa*; with this knowledge the wise (architect) should get it constructed.

133-134. In buildings built of bricks alone, the roof (*prachchhādana*) should be wooden; in stone-built houses, the roof (*tauli*) should be made of stone; these are their peculiarities.

135. It (the roof) should be furnished with bands (*paṭṭikā*) at the middle; and there should be the cornice (*karna*) at their ends.

136. It (the roof) should be square, or rectangular, or of some other shape as would suit the building.

137-138. There should be one, two, or three slabs (*paṭṭa*) placed one above the other; in the interspace there should be placed planks (*phalakā*), or stone (slabs); the roof (*tauli*) should extend to the parapet staff (*jayantika*).

139. It should, as before, end with a device like the pent-roof (*lupā*) or the petal (*dala*).

140. With regard to the (residential) houses I have been thus directed: this should be done owing to its practical benefits which have been observed.

141. The roof (*tulā*) at the side (i.e., the pent-roof) may otherwise be constructed from above the slabs (*paṭṭa*).

142. A beam (*daṇḍa*) made of wood should be attached to its middle.

143. This type of roof (*prachchhādana*) for residential houses was prescribed by the great sages to me.

144. The roofs (*prachchhādana*) of all other buildings are described here.

145. The middle part should be constructed as stated before, and above that should be the entablature (*prastara*).

146. The assemblage of the external members should be as before, and the entablature should be of proportionate height.

147-149. As regards the lower (i.e., internal) side (of the roof) it should be, at the middle, circular just above the crowning fillet (*uttara*, of the entablature); the roof, otherwise, may be furnished with a large support (*mahābhāra*), or a small post (*kshudra-daṇḍa*); and the parapet staff (*jayantika*) should be furnished with the supporting slab (*ādhārapaṭṭa*), and be connected with the roof (*tulā*).

150. The part above the middle covered with the entablature (*prastara*) should be again covered with the roof (*tula*) proper.

151-152. There need not be any small slabs (*kshudra-paṭṭa*) in the lower part of this device; otherwise that part should particularly be made four-cornered.

153-154. There should be slabs (*paṭṭa*) at the four corners, and the buds (*kuḍmala*) should be constructed at the middle of the joint; and on the posts feet (*pāda*) the fully blossomed lotuses should be beautifully constructed.

155. The ornaments for the upper part of the quadrangle (*madhya-raṅga*) in connection with that (roof) will be described (below).

156-157. The capital (*bodhikā*) should be constructed in the upper half of the column below the crowning fillet (*uttara*) at the top of the above mentioned post (*charaṇa*).

158-160. The bridge-like ornament (*pālikā*) should be constructed at the edge of the top of the large ear (*pīna-karṇa*); above that, in the calyx (*nāṭaka*) parts, the bridge (*pālikā*) should be twice in height; above that the height of the stalk (*mṛiṇālikā*) should be equal to the height of the calyx (*nāṭaka*).

161. The large capital (*mahā-bodhikā*) should be constructed above the stalk (*mṛiṇāla*).

162. The wise architect should construct a large roof (*mahā-tauli*) above that large capital (*mahā-bodhikā*).

163. The height of the capital (*bodhikā*) should be as before, and the height of the roof (*taulikā*) should be equal to it.

164. When the slab (*paṭṭikā*) is used for support (*adhāra*) the larger roof (*mahā-tauli*) may be dispensed with.

165-166. The expert architect should construct at the edge of the top of the support (*adhāra*) those beautiful sets of mouldings which were prescribed for the limbs of the entablature (*prastara*).

167. At the top or above the support (*ādhāra*) should be constructed the roof (*prachchhādana*).

168. The roof (*prachchhādana*) should thus be constructed, and be ornamented as before.

169-170. Similarly the ornaments should be put on the upper part of the quadrangle (*madhya-raṅga*); its height should be made as before, and the rest should be discreetly constructed.

171-175. The roof (*prachchhādana*) of the parts beyond the edge of that is described here: the crowning fillet (*uttara*), the second fillet (*vājana*), and the fist-band (*mushṭi-bandhana*) should be constructed above the aforesaid main pillars (*mūla-pāda*), free pillars (*stambha*), and minor pillars (*prati-pādaka*); and the stalk, or the fillet (*vājana*) should be constructed above the crowning fillet (*uttara*), etc.; above that the hip (*śroṇika*) together with the beams (*daṇḍa*) should be constructed.

176-177. The distance between the beams (*daṇḍa*) should be three, four, five, or six *aṅgulas;* the strength permitting the distance between the beams (*daṇḍa*) may be twice (these measures).

178-179. The shape of the roof (*tulā*) should (generally) be like four square slabs (*paṭṭa*); they should be beautifully decorated with or without leaves and creepers.

180-184. Above that the parapet staff (*jayantika*) should be constructed at the interspace; otherwise all the fillets (*uttara*) should be at the end of the forepart of the open space; in the interspaces of the entablature the fillets should be of proportionate parts (measure); all the outside fillets (*uttara*) should be fittingly constructed of timber; the fillet (*uttara*) of the entablature should be at its end from the axis of the post (*pāda*).

185. This is the *Sarvatobhadra* (type); the shape of the *Alaksha* type will be described here.

186. All its beams (*vaṁśa*) beyond the entablature should extend proportionately to the cornice (*karṇa*).

187. The aforesaid pillar should be furnished with fillets (*uttara*); and the surrounding ones should be in accordance with that (i. e. the one at the centre).

188-192. Up to that should extend the *Alaksha* type; the two ears (*karṇa*) should be without any fillet (*uttara*); the beams (*vaṁśa*)

should fittingly be constructed from east to south, from south to west, from west to north, and from north to east, and both inside and out; and the rest should be constructed as before, and the outside should be proportionate to the inside.

193. The covered doors on the outside should be furnished with the fillet (*uttara*), etc.

194–196. The arrangement of the storeys (*tala*) from the crowning fillet (*uttara*) to the bottom one is described (here): if on the outside there be an elongated portion the top of the staff (*daṇḍikā*) should be furnished with the stationary pent-roofs (*lupā*); otherwise it should be tastefully decorated with the aforesaid high platforms (*mañcha*).

197–200. It (the roof) should be built of stone, wood or brick; and the beam (*vaṁśa*), etc., should be made sufficiently strong, and bulky; all the fillets (*uttara*), in the interior and the exterior should be symmetrical; all other members also should be symmetrical to the (main) structure.

201. If the fillets (*uttara*) be made in a contrary manner the master and the building will be destroyed.

202. The wave-ornaments (*taraṅga*) should be constructed at the upper and the middle parts of the buildings of the gods (temples) and kings (palaces).

203–204. If the *Alaksha* and the other type of roof should be constructed according to rules it would bring prosperity: and it would be auspicious for the buildings of (gods), the twice-born, and all others.

Thus in the *Mānasāra*, the science of architecture, the sixteenth chapter, entitled:

The description of the entablatures (and roofs).

CHAPTER XVII

JOINERY

1-2. Joinery and the rules thereof are now described: the joining of timbers in buildings is called joinery (*sandhi-karman*).

3-4. The lower part (i.e. trunk) of a tree is strong and the upper part weak; the wise (architect) should, therefore, select (lit. join) all timbers from the lower part.

5-6. The wood should be selected in this way and be matched by the carpenter. The timbers should never be bent, broken or pointed.

7-10. (First) the *malla-(saṁ)bandha*, secondly the *brahma-rāja*, (then) the joineries called *veṇu-parva*, *pūga-parva*, similarly the *deva-sandhi*, the *rishi-sandhi*, the *ishu-parva*, and the *daṇḍika*—these are stated to be the eight kinds of joinery (which are formed) by joining timbers (as stated below).

11. When two pieces of timber are joined there should be one joint: this is known as the *malla-bandha*.

12-13. In joining three and four pieces of timber, there should be two and three joints respectively: this is called the *brahma-rāja* by the ancients versed in the science (of architecture).

14. With five pieces of timber there should be four joints: this is called the *vaṇu-parva*.

15. With six pieces of timber there should be five joints: this is praised as the *pūga-parva*.

16. With seven pieces of timber there should be six joints: this is known as the *deva-sandhi*.

17-18. The *ṛishi-sandhi* is (formed) of eight pieces of timber; above that (i.e., with nine pieces of timber) should be the joint which

is called the *ishu-parva* ; (and) with many (more) pieces of timber and many joints is (formed) the *daṇḍika*.[1]

19-21. The manner of joining work at the upper (*uttara*) part of pillars (*pāda*) and walls (*kuḍya*) with one or more materials which may be on the inside, outside, and top will be fully described here.

22. The eight joints known as *malla-bandha* and others should be employed in all houses.

23. The long, short, and middling (*sama*) timbers should be joined as directed before.

24-26. The male timber should be joined with male and the female with female, as also the male with female, but the neuter wood should not be joined with the male (or the) female wood in any house.

27-30. The wise (architect) should examine all the four sides of the wood on its outside by turning it again and again from left to right, and ascertain (its gender) ; the internal four sides should be also examined by looking at its face from the outside ; the best architect should accurately ascertain its right and left sides.

31. The manner of arranging all kinds of wood, long, etc., will be described now.

32-33. The long as well as the bent wood should be joined at the right (side of a structure) ; or the long wood may be in the middle, and the bent one at the left and the right.

34-35. In case of joining three pieces of wood (the rule) should be that the middling piece should be on the right, the long piece of wood should be in the middle, and the short one on the left.

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[1] The general shapes of these joints are indicated by their names : the first one would look like (two) wrestlers wrestling against each other ; the second one would have four heads like the four-headed deity ; the third indicates the bamboo joints ; the fourth is like the areca or betel-nut joints ; the fifth is called divine and made of seven pieces of timber, while the sixth is called sagely and formed of eight pieces ; the seventh is arrow-shaped, and the eighth would have many joints.

36. The wood should be joined always at the top and bottom (i.e. at either end).

37. The bottom of a piece of wood should be towards the south when it is placed from south to north.

38. The bottom should be towards the west when the wood is placed from east to west.

39. The bottom joint should be towards the south-west when the wood is placed from west to south.

40. The top joint should be towards the north east when the wood is placed from east to north.

41. The top and the bottom should be joined in the south-east and north-west directions.

42. The joints at the top and the bottom of the hip (middle) part should be of hexagonal shape.

43. If, through ignorance, the top be bipartite the death of the master is inevitable.

44-46. If the wood be joined at the top part (*uttara*) its face should be at the middle (*āliṅga*) and the lower part (*udaya*), the root being at the top and forepart at the bottom[1]; this (rule) is preferred for the pillars (*pāda*) and other parts of all kinds of buildings.

47-48. The wood placed towards the east as a support should be hewed straight from top to bottom, and its end should be placed upwards leaning towards the east.

49-50. The wood should be hewed from top to bottom, the bottom being placed towards the west, and the piece thus hewed at the bottom should be placed at the top lying towards the south.

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[1] The *uttara* implies the whole architrave or the beam of the entablature, *āliṅga* means the ninth moulding from the top of the entablature (*Kāmikāgama*, LIV, 3), and *udaya* indicates growth, plinth or bottom (see the writer's *Dictionary*, pages 79, 71).

51. The bottom of the wood lying in the north should be joined with the top of the wood in the west.

52-53. The top of the piece of wood in the north should be joined above the top of the piece in the east : this joint is known as *sarvato-bhadra*.

53-54. Similarly the pieces of wood in the east, etc., should be joined; by joining pieces of wood in this way, the *nandyāvarta* (joint) is formed which is described here.

55. The wood placed in the east should project towards the south.

56. The wood lying in the south should project towards the west.

57. The wood placed in the west should project towards the north.

58. The wood placed in the north should project towards the east.

59. By (thus) joining wood with its support the joint should be made as (stated) before.

60. The *nandyāvarta* (joint) is thus described; the *svastika* is stated now.

61. All pieces of wood, placed in the east, should have their bottom towards the south and the top towards the north.

62. The wood, placed in the south, should have its bottom towards the west and top towards the east.

63. The top and the bottom of these two (pieces of wood) should be joined in the south-east.

64. The wood, placed in the west, should have its bottom towards the south and the top towards the north.

65. The pieces of wood, placed in the north, should have their bottom towards the west and the top towards the east.

66. As an alternative three tops of the pieces of wood may be joined in the north-west.

67. (When placed) in the south, west, and north, the wood should have its top towards the east and the north.

68. In the south-west and the north-west the wood should be joined in two joints.

69. The pieces of wood in the east and the south should have their tops in the west and the north.

70. The wise (architect) should join the pieces of wood in the south-east and the north-west by the outside.

71. This is the peculiarity of this (type of) joint; the support (*ādhara*) and the wood contained (*ādheya*) being as before.

72. The bottom of the wood should be supplied with holes and the top pointed.

73. The hole at the bottom of the wood in the south should be furnished with the point (*śikhā*) in the west.

74. In this way pieces of wood should be joined in the south-west.

75. So also in the south-east the pieces of wood should be fittingly joined.

76. The hole at the bottom of the wood in the north should be furnished with the point (*śikhā*) in the west.

77. In the same way the best carpenter should join (the pieces of wood) in the north-west.

78. Thus is described the *svastika* (joint), the forepart of which should be fittingly joined in the north-east.

79. The wood in the east should be furnished with a hole, and the top in the north should be furnished with a point (*śikhā*).

80. The support (i.e. where a piece of wood is joined) should have holes, and its forepart should be pointed.

81-82. A courtyard should be furnished in the central part of a dwelling, the outer sides of which should be fenced with wood, and the porch should be built at any convenient (desirable) sides and be joined as it may suit, with materials other than wood also.

83. The support and the joints, etc., all should be constructed as directed before.

84. This is called the *vardha māna* (joint), and this should be employed in the *vardha-māna* (class of buildings).

85-87. The joining of wood at the top, etc., should be made as at the bottom; if it be omitted through ignorance, all prosperity would be ruined; this should, therefore, be avoided by the architect in all sorts of wood joining.

88-89. The manner of joining pieces of wood is described here; the joints will be stated now: the experts should make them suitably in such a way as if there were no joints.

90. With regard to joining wood in pillars the joints should be as aforesaid.

91. The wood of the pillar being divided into three parts, the middle one should be furnished with the points (*śikhā*).

92. Its height and width should be made equal, and the ear above should be furnished with points.

93. Holes should be made at the middle (and) lower part of the ear: the *mesha-yuddha* (ram-fight) joint is (thus) formed.

94-96. There should be seven parts in the breadth, and three parts more (i.e. ten) in the length; as an alternative the length of the ear may be one and a half times or twice the breadth; as an alternative this joint should be spread like a hood.

97. This should be made at the edge of the joint of all kinds of wood.

98. It is said that the hood may be of (any) suitable size in order to fit in with the breadth.

99. Pins should be attached to the bottom and the top: this is known as the *ardha-pāṇi* (half-hand or hoof) joint.[1]

100–102. (When) the same (joint) with two foreheads spreading breadthwise like the half moons, the middle, top, and bottom being furnished with teeth, and the rest being made as before, (then) it is known as the *mahā-vṛitta* (great circle) joint.

103. The three-fold ear of the circular types of these pillars will be described now.

104. The same should be furnished with three ears and three heads (*chūlikā*).

105. It should be furnished with a *svasti-shape*[2] and pins in order to make it strong.

106. This is called the *tri-karṇābha* (three-ear-shaped) joint, the rest being made as before.

107. The four sides of the *mesha-yuddha* (ram-fight) joint should be furnished with four pikes.

108–109. When a plate is furnished at the middle of a quadrangular pillar like a diadem, and the joints are furnished with teeth, it is called the *sarvato-bhadra* joint.

110. This is the direction for joints in the pillar; they should be made as strong as necessary.

111–112. The joints should be suitably furnished at the middle of the pillar just as at its upper portion in particular, as well at the ends of its mouldings.

113. The *mesha-yuddha* joint should be employed in all kinds of stone pillars.

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[1] The other reading *ardha-prāṇa* (half life or bisected heart) does not give a more suitable meaning.

[2] It indicates different figures, 卍 卐 卐 冂 凵 十 etc. (see the writer's *Dictionary*, pages 733, 734, 735, 736)

114–121. The length and width of pillars should be as before; the width at the base of the pillar being divided into six (or) seven parts, the width of the base of the pillar may be increased by one part; and the height of the wooden shaft (*vaṁśa*) should be the same; the cornice (*kuṭi*) with architrave (*uttara*) should (together) be equal, three-fourths, or half (of the shaft); the width should be proportionate, and the height should be made as stated before; the perpendicular height of the cornice (*kuṭi*) and of the frieze (*prati*) should be equal; if the height be more or less it would always cause adversity.

122. Among the aforesaid heights of the joints the one which would make it beautiful should be selected.

123–124. The wise (architect) should, as before, make the joints extend lengthwise (perpendicularly) to the cornice, the architrave and the frieze.

125. *Śaṅku*, *aṇi*, and *śalya* are the synonyms of the *kīla* (nail).

126. *Vṛiddha*, *śūla*, and *danta* are the synonyms of the *śikhā* (point, apex).

127–128. The joints around the width of the pillar should be divided into eight, seven, or six parts; of these, one part should be the width of the nail (*kīla*), and the length of the spike (*śūla*) also (should be one part).

129. The spike and the nail: these two are said to be of equal length.

130. This length and breadth should be equal to the length of the nail above.

131. The length of all the nails (*śalya*) should be made according to one's discretion and it should be as strong as necessary.

132. Nails should be attached at the side and middle of the joints.

133. In its centre should be the hood, afterwards the nail should be fixed.

134–135. The distance from the nail to the root of the hood should be equal to the breadth of the nail, and the edge of this hood above should be hewed by the best carpenter.

136. The length of the nail in front of this hood should be made equal.

137. At the two tongues and the bottom of the hood there should be fixed three teeth.

138—141. Whatever (portion) is to be taken out (in order to fit it in) at the bottom of the lower tooth and at the top of the upper teeth should be hewed, it is stated, at the root of the band and at its top; and a half portion of the breadth or height should be hewed; and the middle nail should, as before, be furnished with points.

142. This is called the *ishu-danta* (joint); it should be made as strong as necessary.

143-145. It should be made like the foot of the crab to which should be fixed a hog's snout; a nail should be fixed in the middle, and should be made sufficiently strong as required: this (joint) is known as the *sūkara-ghrāṇa* (boar-snout)

146-148. I shall (now) describe the *saṁkīrṇa* (short) joint; it should be suitably made sufficiently strong; various pikes and nails should be fixed to the wooden portion only: this should be (called) the *saṁkīrṇa* joint, it is fit for all kinds of buildings.

149. In the *brahma-mastaka* (four-head) joint the pike should be fixed to its face-like shape.

150-151. These are the five kinds of joints; they are used in all kinds of dwellings and also in walls, the front tooth being on the outside.

152. The main tooth and the minor tooth should be attached, and the support and the thing supported should be fixed in.

153. The wood, attached at the side, should be fitted to the fore-part of the crab.

154. If there be an end at the side for the wood, it would be auspicious for the outer side and the root part.

155. The base of the pillar like the root (of a tree) should be made (firm) of wood and stone.

156. The joints should be uniform (*eka-rūpa*) when they are of the same shape and are placed in rows.

157. The expert (architect) should make all these at the (top of the) upper storeys.

158. All their parts, if made in a reverse manner, will cause destruction.

159. The forepart of the length of all pillars also should be furnished with points.

160-162. If the points (*śikhā*) be attached at the end of the waggon (*ānasa*) the distruction of the son and son's son (of the master) will follow, and if they be attached at the side instead of at the middle of the column, and if the root of the joints project outside the master would suffer from increased grief.

163-166. Similarly if the root of the joints be at the middle it would destroy all prosperity, therefore the middle part of the pillar should be kept free of the middle joints; the part to be kept free should be but a line and the nails should be fixed around it: these joints are stated to form a part of the wood and bear the shape of a staff.

167-171. The joints made of wood at the ear (are stated) by name: *Aditya* (sun), *Dharma-rāja* (god of death), *Jaleśa* (god of water) and *Niśādhipa* (moon); these four are said to be (employed) at the main quarters and intermediate quarters, namely, the south-east, the south-west, the north-west, and the north-east; the best architect should make all the wood-joints as directed above.

172-174. At the *gṛiha-kshata*, the *pushpa-danta*, the *bhallāṭa*, and the *mahendra* quarters should be constructed the door of the house, but no joints (*sandhi*) should be made therein.

175-178. To the *daṇḍi(a)ka* (type of pillars) placed at the length and width of a house, as well as between two ears in the middle, and in the middle of the structure the tooth-nail should be fixed, and these joints should not be attached; in other types also joints should not be made at the middle part.

179–180. The right and left of the face of wood at the perpendicular part of the frieze (*prati-vaṁśa*) should be ascertained, and the points should be fixed at the root of the right and at the top of the left.

181. If these points be attached to the middle all prosperity will transform into misfortune.

182. It is certain that all joints at the top and bottom of the timber are more suitable.

183. If there be a hole at the tooth in the bottom, religious merits, fulfilment of desires, and prosperity would be destroyed.

184. If there be wood joints on all sides, a separate joint would not be fitting.

185. If there be one wood at the end of the house there should not be any separate joint.

186. (Pieces of) wood and nails also should be fitted around a building.

187–191. The *yuddha* (fight) and the non-*yuddha* (type of) joints are considered in regard to the pieces of wood with which the outside is covered on all sides; the *yuddha* joints are prescribed for the wood at the end; pikes should be attached to the joints of the wood on the four sides; if there be a *yuddha* joint on the east and west the death of the master is certain; if the non-*yuddha* joint be on the south and north the same misfortune would happen.

192–195. A new piece of wood should be joined with another new piece; an old piece should be joined with another old piece; a new wood should not be joined with the old, nor the old with the new; if this be not done, it would cause famine in the country.

196–198. At the middle, top, as also, from the middle part of (a piece of) wood: from these places should project the teeth; the projection should be one-fourth of the tooth, and (thus) should be fixed the nails, etc.; and the nails, etc. should be fixed to the main material (i.e. wood) in conformity with strength and one's liking.

199. The joint should be made as aforesaid: this is directed by the ancients.

200–202. The *mesha-yuddha* joints are made of all kinds of (well) polished stone and free of points; or it should be from half to one-fourth (of the wooden joints) in accordance with the (required) strength: this should be the *sarvato-bhadra* joint, this should be discreetly made like the porch (*bhadra*).

203–204. The (joint of the) *nandyāvarta*-shape should be fixed at all kinds of stone buildings in the forepart, at the right side, the top, and the end.

205–206. The death of the master would occur if the nail of joints be fixed to the middle of the pillar in the centre of the house

207-208. If the root of the nail be beyond the (prolongated) part of a pillar it would cause the loss of wealth and the misery of the people.

209–212. The wood lying above with pointed head, or in the forepart of the fillet should discreetly be employed everywhere with or without points.

213–216. (In other places) also those (joints) should be discreetly fixed, because it would be injurious if they be otherwise than fitting, that is, if they be not free from holes and points, and if they be without order, and otherwise than without their (prescribed) features.

217–221. As the loss of wealth and destruction of the master are involved, all the joints, etc., should be made as directed: (thus) they should be employed by architects at the root part of a piece of wood, at its ends, face, and sides; if employed in this way they would be the source of all prosperity.

Thus in the *Mānasāra*, the science of architecture, the seventeenth chapter, entitled:

The description of joinery-work.

CHAPTER XVIII

THE GENERAL FEATURES OF EDIFICES

1. The general characteristic features of edifices also will now be briefly described.

2–3. The edifices fit for the residence of the gods and the twice-born begin from one storey and end at twelve storeys.

4–5. The number of parts into which they are divided (i.e. the front elevation) their (different) shapes, the features of the domes, etc., and then in order the measurement of the pent roofs, and the construction of the domes—all these (will be described) in order.

6–9. The best ground should be dug as deep as (the height) of a man with uplifted arms in order to reach water or rock, and this (excavation) should be filled up with sand mixed with water, and (hardened) by beating it with a piece of wood shaped like the elephant's foot. Upon such a strengthened (foundation) edifices (of various storeys) should be built in accordance with the requirement.

10–12. In the smallest type of one-storeyed edifices there are stated to be six kinds of division (of breadth) in cubit selected as aforesaid, namely, one, two, three, four, five, or six.[1]

13. In the intermediate type of one-storeyed edifices there should be five, six, or seven divisions.

14. In the largest type of one-storeyed edifices there should be six, seven, or eight divisions.

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[1] These divisions or parts of the total measure (of width, breadth, and height) extend from the outside of the corner pillar to the middle of the central pillar (see lines 57, 78, 88, 89) and are allotted to the different component members of which an edifice is composed (see also lines 24, 57, 78, 135).

15. In the smallest type of two-storeyed edifices there should be five, six, or seven divisions.

16. In the intermediate type of two-storeyed edifices there should be six, seven, or eight divisions.

17. In the largest of type of two-storeyed edifices there should be seven, eight, or nine divisions.

18. In the smallest type of three-storeyed edifices there should be seven or eight divisions.

19. In the intermediate type of the three-storeyed edifices there should be nine or ten divisions.

20. In the largest type of three-storeyed edifices there should be eleven or twelve divisions.

21. In the smallest type of the four-storeyed edifices there should be eight, nine, or ten divisions.

22. In the intermediate type of the four-storeyed edifices there should be nine, ten, or eleven divisions.

23. In the largest type of the four-storeyed edifices there should be ten, eleven, or twelve divisions.

24–25. In the smallest type of the five-storeyed edifices the width should be divided into nine, ten, eleven, or twelve divisions by the learned architects.

26–27. Ten, eleven, twelve, or thirteen divisions should be made in the width of the intermediate type of the five-storeyed edifices.

28–29. The width should be divided into eleven, twelve, thirteen, or fourteen divisions in the largest type of the five-storeyed edifices.

30–31. The width should be increasingly divided into twelve, thirteen, fourteen, or fifteen divisions in the smallest type of six-storeyed edifices.

32–33. The width is said to be divided into thirteen, fourteen, fifteen, or sixteen divisions in the intermediate type of six-storeyed buildings.

34-35. Thirteen, fourteen, fifteen, sixteen, or seventeen divisions are said to be made in the largest type of six-storeyed edifices ; the expert architect should do accordingly.

36-37. Fourteen, fifteen, sixteen, seventeen, or eighteen divisions (should be made) in the smallest type of seven-storeyed edifices.

38-40. Fifteen, sixteen, seventeen, or eighteen, (or nineteen) divisions should be made in the intermediate type of seven-storeyed edifices.

41-43. There are stated to be sixteen, seventeen, eighteen nineteen, or twenty divisions in the largest type of seven-storeyed edifices ; the expert (architect) should do accordingly.

44-46. The width should be divided into seventeen, eighteen, nineteen, or twenty divisions in the smallest type of eight-storeyed edifices ; (these) edifices should be built according to these divisions.

47-49. The width of edifices being divided into eighteen, nineteen, twenty, or twenty-one divisions, the intermediate type of eight-storeyed edifices should be built in accordance with the measurement of these divisions.

50-51. In the largest type of eight-storeyed edifices there should be nineteen, twenty, twenty-one, or twenty-two divisions.

52-54. In the smallest type of nine-storeyed edifices the width should be divided into twenty, twenty-one, twenty-two, or twenty-three divisions

55-57. In the intermediate type of nine-storeyed edifices the width by the middle should be divided into twenty-one, twenty-two, twenty-three, or twenty-four divisions.

58-60. There are stated to be twenty-two, twenty-three, twenty-four, or twenty-five divisions in the largest type of nine-storeyed edifices ; the expert architect should do accordingly.

61-63. The width by the middle should be divided into twenty-three, twenty-four, twenty-five, or twenty-six divisions in the smallest type of ten-storeyed edifices.

64-66. The width should be divided into twenty-four, twenty-five, twenty-six, or twenty-seven divisions in the intermediate type of ten-storeyed edifices.

67-69. The width should be divided into twenty-five, twenty-six, twenty-seven, or twenty-eight divisions in the largest type of ten-storeyed edifices.

70-72. The measure of width should be divided into twenty-six, twenty-seven, twenty-eight, or twenty-nine divisions in the smallest type of eleven-storeyed edifices.

73-75. The width is said to be divided into twenty-seven, twenty-eight, twenty-nine, or thirty divisions in the intermediate type of eleven-storeyed edifices.

76-78. The width at the base of the edifice should be divided into twenty-eight, twenty-nine, thirty, and thirty-one divisions in the largest type of eleven storeyed edifices.

79-81. The width should be divided into twenty-nine, thirty, thirty-one, or thirty-two divisions in the smallest type of twelve-storeyed edifices.

82-84. The measure of width should be divided into thirty, thirty-one, thirty-two, or thirty-three divisions in the intermediate type of twelve-storeyed edifices.

85-87. In the width there should be thirty-two, thirty-three, thirty four, and thirty-five divisions in the largest type of twelve-storeyed edifices ; the expert architect should (thus) make the divisions [1].

88-89. These divisions should end by the outside of the corner pillar and the middle of the middle pillar: this should be done according to one's discretion.

90-91. From above the basement up to the dome it (an edifice) may be square or rectangular ; its shape (of the portion) from the neck to the pinnacle should be oval, or circular (i.e. round).

92. It (the edifice) should be furnished with three, two, or one dome.

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[1] In accordance with the preceding order this series should begin from thirty-one and end at thirty-four; but the order is not uniformly followed, for instance in lines 34-35.

93. That (type of edifices) which is of quadrangular form is called *Nāgara* (northern)[1].

94-96. That (type) is named *Vesara* (eastern) the upper portion of whose basement is of the circular or elliptical form, from the neck (of the dome) to the apex it is fittingly quadrangular, and from above the circular part it is oval.

97-99. The *Drāviḍa* (Deccan or southern type) is stated to be octagonal or hexagonal from the basement up to the apex (of the dome); as an alternative its forepart may be rectangular (and) the part below the neck quadrangular; and its top part should be as before.

100-105. They (those types of edifices) should be furnished with pinnacles of uniform shape and should be three in number placed lengthwise; the dome placed upon the oval portion should be circular or quadrangular; this form should be given to the part from cyma (*padma*) to the bud (*kuḍmala*); each of these (pinnacles) should be of four kinds, namely, beginning from one cubit and a quarter and increased by six *aṅgulas*, ending at four cubits; they should (again) be of the smallest to the largest types and be placed in edifices of one to twelve storeys.

106-110. Then the height of these (domes) are stated in accordance with the castes (of those who occupy the edifices): in case of the Śūdras they should be one cubit (in height), and in case of the Vaiśyas two cubits; in case of the crown prince those of the measure of two-and-a-half cubits should be fitting; for the kings those of three cubits, for the Brahmans those of three cubits and a half, and for the gods the height of the domes (of their edifices) should be made four cubits.

111-120. It (the height of the dome) from the bridge moulding (*pālikā*) to the bud being divided into seventeen parts, the height of

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[1] Further details of this type are apparently included in lines 90, 91, 92; similar details are given under the types called *vesara* (lines 94—96) and *drāviḍa* (lines 97—99). For fuller details see the writer's *Dictionary* under *nāgara* (pages 299--316).

the bridge should be one-and-a-half parts, and the fillet (*vājana*) half a part; the height of the cyma (*padma*) should be three parts, and the neck (*kandhara*) one part; the fillet-cyma (*kampa-padma*) should be half a part, and the height of the pitcher (*kumbha*) two parts; the lotus with petal above (the pitcher) should be constructed of one part and a half; above that the height of the pinnacle-staff (*daṇḍa*) is said to be three parts; the fillet-cyma (*kampa-padma*) should be half a part, and the fillet (*vājana*) also half a part; above that the fillet-cyma (*kampa-padma*) should be constructed of one part and a half; the height of the bud (*kuḍmala*) at the middle of the height of the pinnacle-staff (*daṇḍa*) should be two parts; if it is to be properly furnished with ornaments it should be covered with filaments of the lotus.

121–125. As an alternative the height of the dome may be measured in *daṇḍa* (rods)[1]; the height of the bridge-moulding (*pālikā*) should be one rod (*daṇḍa*) and the height of the cyma (*padma*) three rods (*daṇḍa*); the neck (*kandhara*) should be one rod (*daṇḍa*), and the height of the pitcher (*kumbha*) two rods and a half; the upper band (*paṭṭa*) should be one rod, and the height of the bud (*kuḍmala*) two rods; and the rest should be given to the middle part of the pinnacle-staff (*daṇḍa*), and it should be ornamented as before.

126–127. The length of the head (*śiras*) should be five parts, and that of the bridge (*pālikā*) three parts; their breadths should be five parts and four parts and a half (respectively).

128. The length of the cyma (*abja*) should be three parts, and (its breadth) one of these three parts.

129. The ear (*karṇa*) should be (placed) above the cyma (*padma*), and the width of the pitcher (*kumbha*) three times that (of the *cyma*).

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[1] As a unit of measure four cubits or two yards make one *daṇḍa*; this would give unusual measures to the mouldings; *daṇḍa* may be taken here to imply not this unit but simply one of the several equal parts into which an object is divided. This interpretation seems to be implied by line 125.

130-131. The length of the pitcher (*kumbha*) should be nine parts, and the width of the pinnacle-staff (*daṇḍa*) one part; the length of the staff should be three parts, the bridge (*pāli*) the same (three parts), and the bud (*kuḍmala*) one part.

132. The large lotus (*mahābja*) should be furnished with eight petals, and the rest should be constructed according to one's discretion.

133-134. Below that (the lotus) the projecting moulding (*vihṛita*) should be twice that, and half of the latter should be the supporting small band, and its larger band should also be half of it, and twice that (band) should be the cyma below.

135. With the rest should be made the petal: the breadth should be discreetly laid out (i.e. ornamented).

136-140. They (the edifices) should be built of stone, brick, wood and iron; (as regards materials) the edifice should be of three kinds, namely, simple (*śuddha*), mixed (*miśra*) and amalgamated (*saṁkīrṇa*): it is (stated to be) *śuddha* when it is built of one material only, *miśra* when built of two materials, and when the edifice is built of three materials, namely stone, brick, and wood, it is called *saṁkīrṇa*; but the best architect should preferably build (them) with one material.

THE DOME-NAIL

141. The length, breadth, and the features of the dome-nail (*kīla*) will be described now.

142. The length of the dome-nail should be equal to the length of the pillar in the upper storey, or one and half times the height of the neck (of the dome), and its width should be equal to the diameter by the base of the dome-nail.

145-146. As an alternative, the width of the nail (of the dome) at its base should be one *aṅgula* in measure: an iron or wooden nail should be (fixed) as before of (i.e. measuring) twenty-three or twenty-four *aṅgulas*.

147-148. The length (i.e. body) of the nail is stated to be triangular, base square, middle part octagonal, and the fore-part (top) circular.

149. The width (of the nail) at the top should be one *aṅgula*, it being tapering gradually from base to top.

150. The middle part of the nail may otherwise be shaped in conformity with the apex.

151-154. The width of the dome-nail is stated to be three times its length which is measured by the outside of the base, and its thickness should be half the breadth of the base of the nail: such base of the nail (as would be fitting) should be given thereto (i.e. to the nail).

155. The nail should be made of copper, iron, and wood whichever may be available.

156-157. The architect together with the workmen should select wood as stated before: the *khadira* (acacia catechu), *khādira* (catechu), *tintriṇī* (tamarind), and other strong (*sāra* pithy,) trees.

158-159. The learned architect should at that time (when it is made of wood) mark (lit. announce) the face of the dome-nail, and the carpenter should make it straight (even), by cutting, but must not break it.

160. The dome-nail is thus described; the features of the brick will be described next).

61. It (the brick) should be measured as before, and the male and female bricks must be distinguished.

162-163. The brick is known as male when it is uniform in length from bottom to top, and it is female when it tapers from bottom to top.

164-165. In stone-built edifices it (the nail) should be made of stone, and in brick built ones of brick, and in male edifices it (the brick) should be male, and in female, female.

166. When the stone is collected it (also) should be distinguished as male and female.

167. The brick at the top is thus described. The features of the pent-roof (*lupā*) will now be (specially) described.

THE FEATURES OF THE PENT ROOFS

168-169. The height (of the pinnacle) should be twice the height of the dome (*stūpi*), or it may be (of any other proportion) conforming

to the height of the edifice: such should be the height of the pinnacle *śikhara*), and half of it should be the height of its neck.

170. The pinnacle should conform to the pentroof, inclusive of its neck and extending up to the (upper) base.

171. The neck as stated in connection with the entablature should extend from the upper fillet (*uttara*) down to the stalk.

172. Above that should be constructed the pinnacle-staff (*laṇḍaka* . The measurement of the pentroof is stated here (below).

173-180. The measurement of the pentroofs (in the houses) of the gods and men (will be described) in order: *ambara*, *viyat*, *jyotis*, *gagana*, *vihāyas*, *ananta*, *antariksha*, and *pushkala*, these eight kinds of pentroofs should be constructed in the edifices (temples) of gods; this has been prescribed by the ancients; *mahī*, *jyā*, *kāśyapī*, *kshauṇī*, *ūrvī*, *gotrā*, *vasundharā*, and *vasudhā*, these eight kinds of pentroofs are said to be constructed in the edifices of men; but all these are fit for (temples of) gods, but for men (i.e. residential buildings) only those prescribed are fit, because the measurement (of the pentroofs) prescribed for temples is never desirable for (the pentroofs in) human dwellings.

181. When its elevation and width are equal to the height of the pinnacle it (the pentroof) is (called) *ambara*.

182. When its width and elevation are respectively eight and seven (in proportion) it (the pentroof) is (called) *viyat*.

183. When its width and elevation are seven and six in proportion it (the pentroof) is (called) *jyotis*.

184. When its breadth and height are six and five in proportion it (the pentroof) is known as *gagana*.

185. When its width and elevation are five and four (in proportion) it (the pentroof) is (known as) *vihāyas*.

186. When its width and elevation are four and three (in proportion) it is *ananta*.

187. When its breadth and elevation are three and two (in proportion) it is *antariksha*.

188. When its diameter (i.e. width) and elevation are two and one (in proportion) it (the pentroof) is called *pushkala*.

189. The width of the corner (lit. ear) which is built at a distance of twice the elevation (of the pentroof) should be one cubit.[1]

190–191. As an alternative (to what has been said) the height of the pinnacle (*śikhara*) being divided into eight parts (which are also the height of the roof)[2] and its width being one part more (i.e. nine) it (the pentroof) is called *mahī* by the learned.

192. When its elevation is seven parts and width (lit. the first one) eight it (the pent roof) is known as *jyā*.

193. When its elevation is six parts and width seven it (the pentroof) is called *kāśyapī*.

194. When its elevation is five parts and width six it (the pentroof) is known as *kshauṇi*.

195. When its elevation is four parts and diameter (i.e. width) five it (the pentroof) is called *ūrvī*.

196. When its elevation is three parts and width four parts it (the pentroof) is called *gotrā*.

197. When its elevation is two parts and width three parts it (the roof) is (called) *vasundharā*.

198. (And) when its elevation is one part and diameter (i.e. width) two parts, it (the pentroof) is (called) *vasudhā*.

199. As before the width of the corner (lit. ear) is stated to be one cubit.

200–203. At the top, side, and end of the council chambers, pavilions and, gateways, upon the nose (lit. vestibule) and porch of the halls, at the summit and nest (part) of the arches, and at the (pigeon's beak-shaped) corona and cage (part) at the top of all buildings, the best architect should make (the pentroofs) like the elephant's trunk.[3]

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[1] Compare line 199.

[2] compare line 181.

[3] See line 205 where it is stated that the pentroofs should look like a flight of stairs which bears some resemblance to the elephant's trunk.

204-205. When this (the pentroof) is made in the middle part it should extend up to the end of the ear (*karṇa*) and be made like a flight of stairs in descending order; its measurement will now be described.

206. The wise architect should construct a row of pentroofs[1] of the *vikalpa* type between the two middle ears (*karṇa*).

207-209. There may be one, two, three, four, five, six, seven, eight, nine, ten, eleven, and twelve pentroofs; but according to some the increment may be by one (two) and there may be furnished one, three, five (rows of) pentroofs (and so on)[2].

210. Those pentroofs which are made like a flight of stairs are of the *chhanda* type.

211. It is faulty to have an even number of the *vikalpa* type (of pentroofs) in the temples of gods and in the palaces of emperors.

212. Therefore, the wise (architect) should construct the pentroofs in the buildings of the Śūdras and others in a decreasing number.

213. This (rule) should be followed in the principal buildings, especially in the small ones.

214. For (the buildings of) the Brahmans one to eleven (pentroofs) of the *vikalpa* class are fitting.

215. For the (palaces of the) kings one to nine *vikalpa* (pentroofs) are stated (i.e. prescribed).

216. For the (residences of the) crown princes one to eight *vikalpa* (pentroofs) are fitting.

217. For (the houses of) the Vaiśyas one to seven *vikalpa* (pentroofs) are stated (i.e. prescribed).

218. And for the (dwellings of the) Śūdras one to five *vikalpa* (pentroofs) are suitable.

219. For (the buildings of) all other low caste people one to three *vikalpa* (pentroofs) should be (suitable) as before.

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[1] See lines 219—220.

[2] See line 212 where it is stated that the number should decrease in an order.

220. Thus are stated the rows of pentroofs which should be constructed by the best architect.

221. The measure of the pentroof at the middle should desirably extend up to the ear (*karṇa*)[1].

222. All those (pentroofs) of the *vikalpa* class which extend from (a point) other than the middle should be partitioned (suitably).

223-224. The width of (all) the pentroofs should conform to the measure of the ears, and their length is also) stated to be in conformity with the measure of their ears.

225-226. Its (the pentroof s) inclination should be equal to, one-and-one-fourth, or one-and a-half times its length and of its width.

227. It (the pentroof) should be of proper measure and of suitable proportion, and should be placed in its proper place.

228-229. The width at the base of the pentroof should be three, four, five, or six parts (*aṅgulas*), and it should extend up to the end of its inclination (which) should be equal to, or three-fourths, or half of it

230. Its thickness preperably all over should be one, two, or three *aṅgulas* (parts).

231. And the width of all other parts should be made in accordance with one's discretion.

232—234. The width (of the pentroof) should be extended one, two, or three (parts) above the pillar, and the aforesaid width of the pentroof should extend (also) to the end of its beam; there is no defect if the forepart of the pentroof extend to the lower pillar.

235-236. Nine lines are drawn (lit. chords are spread) from one ear (*karṇa*) to another; the belly (part of the pentroof) is known to be below those lines at their forehalf.

237—238. Four lines (chords) should meet at the belly part of the pentroof; whereof the shape may be like the crescent or the (full) moon if that suits and is desired.

[1] Compare line 204.

239. There should be one or two holes at the bottom of the uppermost fillet (*vājana*).

240. The hole should be made below the line (chord) joining the slope at the end of the crescent-shaped roof (lit. moon).

241 The best architect should fix a cane (*vetra*) pattern at that hole extending from the support of the pentroof.

242. All the middle pentroofs in a row may number as many as one likes.

243. The variegated blooming *karavira* flowers should be constructed (therein).

244. Together with the addition of a petal the pentroof should be made at the two ears (*karṇa*).

245. Its top should be slightly opened and the bottom firmly closed.

246. One pent roof should be constructed on the ear (*karṇa*) and many at the side.

247. The cocoanut petals of all sizes, long, short, and broad, should be constructed (on the pentroof as a decorative device).

248. Many buds should be constructed at the ears of the pentroofs (furnished) with many appendages.

249. These are said to be the features (in general, of the pentroofs) ; they should be fitted (to the edifice) like a ridge (*kaṭaka*).

250. Above the parapet staff (*daṇḍikā*) there should be a fillet (*vājana*), and this (staff) should be constructed above the end of the pentroof.

251. Inclined figures of the sea-fish should be made to the left and right (of the pentroof).

252. This has been introduced by me ; this should be constructed in the temples of the gods.

253-254. The pentroofs should be made circular, hexagonal, octagonal, or rectangular (i.e. flat), and their measurement should be made as aforesaid.

255-257. I (make) the five kinds of pentroofs, in accordance with the castes; thus (they include) the addition of two

together with three, and ending with the fourth (caste), as (they are required) for the gods and men, (the latter) ending with the people of the Śūdra caste[1].

258. All these (pentroofs) extending from the middle to the ear (of a structure) should be made like a flight of stairs.

259-261. The *vikalpa* type (of pent roofs) of the shape of the forepart of a conch-shell should look like a row of conch-shells; they should be made inclining from the right side as stated before (and) furnished with many fillets: they are called the *Śaṅkhāvarta* (row of conch-shells); they should be employed in the edifices (i.e. temples) of gods.

262. But as an alternative, all the pent roofs may have a straight (flat) look (lit. face).

263-264. They should be furnished with various paintings, holes, and cane-patterns (*vetra*), and be made sufficiently strong and beautiful, and the rest should be made according to one's discretion.

265. This is said to be the pent roof on the upper part (namely), the pinnacle (*śikhara*) or above the entablature (*ambara*).

266. Planks (*phalakā*) with projection (*kshepaṇa*) should be fixed (thereon) with nails made of copper or iron.

267. The drum of the ear (*karoṭi*) should be made of gold or earth.

268. It should be properly besmeared by the wise (architect) with molasses, water, and mortar.

269. The crescent (*prati*) should be attached to the inside or outside, or on the upper part (of the pent roof).

270-271. They (the roofs) should be made upon the entablatures, as is aforesaid, just as the pedestal is made at the base (pillar), of the roof for strength and beauty.

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[1] The idea appears to be that the author distinguishes the roofs into five types in accordance with the five classes of buildings, namely, for the gods and the four castes of human beings.

272. If the measurement be other than what has been proscribed it would bring forth misfortune and evil.

273. Therefore, if all things be made as prescribed, it would be the source of prosperity.

274. For the sake of beauty and strength a circular fillet (*kampa-vritta*) should be (fixed) at the base of the pentroof.

THE FRONT PORCH.

275. For all (the edifices) there should be a front porch (*mukha-bhadra*), of which the characteristic features will now be described.

276–278. Beginning from the support of the pinnacle (*śikhara*) extending to the end of the bridge (*pālikā*), or beginning from the top of the entablature and then carried up to its crowning fillet (*uttara*)[1] thus should be the height of the front porch (*mukha-bhadra*), and its width should be as aforesaid.

279–283. Of the seventeen parts of the height (of the porch), two parts should be the height of the entablature; the height of the platform (*vedikā*) should be one part, and the height of the neck (*gala*) three parts; twice that should be the height of the bottom (*tala*), thence up to the end of the finial (*śikhā*) should be four parts for the finial (*śikhā*): the neck (*gala*) should be one part, and the face (*vaktra*) three parts; and the rest should be the end the apex.

283–284. It being again (divided) into fifteen parts, the entablature and all other members should be made as stated before.

285. The nose (*nāsikā*) and its support should be one part each, or the support may be two parts

286. Five and two parts should be the length, and half of that should be the breadth of the belly (*kukshi*).

287–289. At the end of the belly (*kukshi*) should be made a (miniature) house (*sadma*) or a window (*vātāyana*), or (therein) should

[1] It sometime signifies the whole architrave and also denotes a particular member of the pedestal and entablature and resembles the corona or the square projection of the upper part of the cornice. For further details see the writer's *Dictionary* (p. 79).

be made a leaf of the shape of a window (*gavāksha*) or as support of the plate (*paṭṭikā*); otherwise it may be decorated with paintings and all (other) ornaments.

290. Surrounding the outside of the nose (*nāsikā*) should be furnished leaves of the shape of a window (*gavāksha*).

291-292. From this towards the upper part of the inner side it should be decorated with the images of gods, genii, leographs, lions, geese, trees, and creepers, etc.

293. At its top should be made the monumental face (*kīrti-vaktra*) in the shape of a projection.

294-295. By the side of its nest-like support (*nīḍa-lambana*) and also by the two sides of the breast (middle part), it should be furnished with the images of the demigods, *vidāyādharas* and others, and with the images of the crocodiles (*grāha*).

296. The eyes (of the crocodile) should be long and broad, and the cheeks round.

297. The ears at the end of the cheeks should be like those of the elephant, and look like waves at the end.

298. There should be two teeth in front of the mouth, and the four legs should be like those of the deer.

299. The distance below the eyes and above the neck (*vaśaga*)[1] should be three-faced lengthwise.

300. Its face should be like that of the sea fish and the tongue should be attached to the two small teeth.

301. All the limbs from the face to the tail should be decorated with leaves and creepers.

302. Its measurement should be made discreetly: the crocodile is thus described.

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[1] Literally submissive, hence support (for the head); compare *kandhara* which also means that which holds up (*dharayati*) the head (*kam*).

303-304. The wise architect should make the monumental face and the lion-face as aforesaid at the end of the ear, and on the forepart of the cheek, (as well as) on the dome (*stūpika*), and the topmost (*śriṅga*) part, (of the structure).

305 From the middle of the two eyes attached to the face, should be made the root of the apex (*śikhā-mūla*).

306. The face should be (made) smiling, and the eyes looking to all (sides).

307. The two ears should be like those of a boar, and the two horns like those of a ram.

308. One of the teeth should slightly resemble a projecting tooth and should be attached to he root of the fang.

309. The cheeks on the two sides should be smiling, and should be straight and broad at the two foreparts.

310. The terrible eyes should be made dazzling with fury.

311. The face should be dark-blue all over (like) the face of the female crocodile.

312. The teeth and the lips should be white, and the face should be furnished with two eyes and two ears.

313. The arms and the tail, etc., of the crocodile should project on all sides.

314. The dome and the topmost part should be furnished as aforesaid with leographs shaped like the village-dog.

315. The hair should suspend over the neck, and the long tail should be four times as long as that (hair).

316. The goose and the lion should be made as aforesaid with a little dark-blue colour all over.

317. The architect should discreetly furnish (the images of) the elephant, the horse, and other animals.

318-319. In the palaces of Kings the images of gods, godesses, demons, and the demi-gods, *yakshas* and *vidyādharas*, should be carved as aforesaid.

320. In the buildings of all other people the images excluding those of gods and demons should be carved.

321. The images of Sarasvatī (goddess of learning) and Lakshmī (goddess of wealth) should be made in all buildings.

322-324. In all kinds of palaces, pavilions (*maṇḍapa*), gate-houses (*gopura*), gate-ways (*dvāraka*), and in all types of temples of the gods and the dwellings of the Brahmans, the front porch (*mukha-bhadra*) should be constructed and be decorated with all ornaments.

325. The wise (architect) should construct the window below the nest-like parts (*nīḍa*) and the neck (*grīva*).

326. In the centre a door should be fixed and the window should be furnished with panels.

327. These (windows) should be constructed in the pinnacle (*śikhara*), or on the topmost storey.

328. Interspaces should be ornamentally given to the middle or the forepart.

329 The expert measurer should (correctly) measure the pent-roof and (such other) auxiliary (lit. inactive) objects. [2]

330. (In this way) should (also) be measured the eight kinds of nest-like pentroofs, namely, *Ambara*[3] (lit sky) and others.

331-332. The pentroof may be made without the ear (wing); and the number of the pentroofs should be (fixed) in accordance with one's discretion; whatever may be (the number) in edifices there would be no defect.

333-335. The pentroofs may be made surrounding the top of halls, nest-like portions, pinnacles, and the topmost part (of the edifice); their fore-half should serve the purpose of a support for the small dome in case of a solid structure

[1] That is, the measures of all these objects should be absolutely correct.

[2] Literally, *jaḍa* means inanimate objects, that is the objects which do not form the essential part, hence it may imply members which are perhaps occasionally employed.

[3] See lines 174 - 175 above.

336-339. Twenty-one should be (the maximum number of pent-roofs) for all (kinds of buildings) of the gods (and Brahmans), the kings (i.e. Kshattriyas), the Vaiśyas and others; the number ending at thirteen or an even number (of pentroofs) should be avoided at the top of edifices; this may be considered as an optional or compulsory rule.

(THE ERECTION OF THE DOME-NAIL.)

340. The erection of the dome-nail (*stūpi-kīla*) in accordance with the rule will now be described.

341-342. A pavilion for sacrifice should be constructed in front of the main edifice or towards its north or north-east with the aforesaid characteristic features.

343. The ceremonies of sowing the seed (*aṅkurārpaṇa*) and consecration with invocation (*adhivāsana*) should be performed at the beginning.

344-345. The *sthaṇḍila* plan (of forty-nine plots) should be made in the pavilion and it should be marked with the *śāli* corn powder, or a plan of twenty-five plots (i.e. the *upapīṭha*) should be made, and (the boundary lines should be) marked with the powder of pure corn.

346-347. The *kuśa* grass should be spread over (the ground) and afterwards he (the architect) should wash his feet; then he should perform the ceremonies of washing the face (*āchamana*), and the gathering together of all things.

348-349. The architect together with the Brahmans should pronounce benediction, and (worship) Brahmā and other gods with perfumes, flowers, and incense, etc.

350. The dome-nail should (then) be raised up and placed on the central plot of the *sthaṇḍila* plan.

351. Four pieces of brick should be placed round the nail.

352. Beyond these, pots filled with pure water should be placed around.

353. The principal pot should be placed in the far end of the north-east.

354-355. Around it should be placed eight pots duly furnished with strings, cloths, bunches of eleven leaves, and auspicious fruits.

356. To the eastern side of the dome-nail (*kīla*) a gem and iron should be placed.

357. The receptacle of the gem should be covered with new cloths and bunches of leaves.

358. The dome-nail (*stūpi-kīla*) should be covered with new cloths and bunches of leaves.

359. The Lord of the universe should be prayed to in the main pot and be meditated on[1].

360-361. He should be worshiped with perfumes and flowers; dishes should be offered to Him, and then incense and lamp should be offered amidst the sound of music and dancing.

362-363. The eight female deities (*śakti*) should be worshipped in the eight pots placed on the east, etc. They should be worshipped in their different names, their address commencing with the mystic syllable (*om*) and ending with *namaḥ*.

364. The dome-nail (*stūpi-kīla*) should be worshipped with perfumes, flowers, and incense.

365. The holy sacrifice with fire should then be performed in front of it (the nail) in the sacrificial pit (*kuṇḍa*) or the sacrificial plot (*sthaṇḍila*).

366-367. (In that sacrificial fire) *samidh* (plant), clarified butter, boiled rice, and fried rice should be offered twenty-five times each, by pronouncing the *hṛillekhā-bīja*,[2] (the address) commencing with *om* (*praṇava*) and ending with *namaḥ*.

368. After the sacrifice the architect should move to the boundary of the sacrifical ground (*sthaṇḍila*).

369. The ideal images of those gods in whose temples the dome-nail (*stūpi-kīla*) is to be placed should be meditated on.

370. And by pronouncing their own *mantras* (incantations), the dome-nail (*stūpi-kīla*) should be worshipped.

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[1] If the image (*mūrti*) or painting (*paṭa*) cannot be made, a deity may be worshipped in a pot.

[2] The mystic letter forming the essential part of the *mantra* (incantation) of a deity.

371. The wise (priest) should meditate on those four top-bricks as the seats of those gods (of the quarters).

372-373. The limbs being concealed under a new cloth[1], letters should be written with bricks : स (S), ह (H), क (K), etc., should be marked with a (sharp) weapon (respectively) in the east, etc.

374. The four sides of the dome-nail (*stūpi-kīla*) should be marked with a string, starting with the east.

375-377. The wise (architect) should hold up the face and mark the *śrīvatsa* figure[2] on the forehead ; amidst the pronouncement of *svasti* (all be good), *jaya* (victory) and other such auspicious sounds it (the figure) should be written in gold (colour) with honey and milk, with a gold brush.

378-379. The best architect should (then) remove the covering (of cloth) and being accompanied by a calf and a girl present (to the pot) honey, clarified butter, and a heap of corn.

380. It (the dome-nail) should be worshipped with perfumes and flowers amidst all auspicious sounds.

381. It should then be covered with various cloths, and be ornamented with flower-garlands.

382. (With) a long bunch (of *Kuśa* grass) it should be worshipped, and the villages etc., should be circumambulated.

383-385. The dome-nail (*stūpi-kīla*) should be brought in, and be placed upon the edifice ; on the side or top of the edge (*pālikā*) and nose (*nāsikā*) a jewel-pit should be dug, and the nail (*kīla*) should be placed thereon facing the east.

386. It should be worshipped with nine gems and (various) metals with those *mantras* (incantations).

387-389. Gold pieces should be placed in each of the three chambers inside the pit ; copper should be placed on the east, and iron on the south, and silver on the west as well as on the north.

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[1] Like a photographer : but the object is mystical.

[2] A special mark on the breast of Vishṇu.

390-394. The ruby *padma-rāga*) should be placed in the centre, and the diamond (*vajra*) on the east, the coral (*vidruma*) on the south-east, the sapphire (*nīla*) on the south, the topaz (*pushpa rāga*) on the south-west, the emerald (*marakata*) on the west, the opal (*gomedaka*[1] on the north-west, the pearl (*mauktika*) on the north, and the lapis lazuli (*sphaṭika*, lit. crystal) on the north-east.

394-395. These gems should be offered to the lords of those quarters in their own names, the address commencing with *om* and ending with *namaḥ*.

396-400. The architect should put on special dress, and his five limbs should be duly ornamented; and on an auspicious moment of a good *lagna* (conjunction of planets), amidst the pronouncement of victory and other auspicious sounds, and while the Brahmans utter the sound of *svasti* (may there be good) to their utmost, the dome-nail (*stūpi-kīla*) should be held up by the architect together with the workmen (*sthāpaka*) and be placed in the pit, and the essential part of the incantation (*mūla-mantra*) should be pronounced.

401. Four bricks should be placed round the dome-nail (*stūpi-kīla*).

402. The letters beginning with श (*ś*) should be marked in order in the quarters beginning from the east and ending with the north-east.[2]

403-404. The architect should take the main pot and together with it circumambulate (the dome-nail) and sprinkle its water on the top of the dome-nail.

405. The four bricks should be worshipped with water from the pots placed on the east, etc.

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[1] A gem of four different colours, namely, white, pale-yellow, red, and dark-blue; it is stated to be found in the Himalaya and the Indus.

[2] The letters श, ष, स and ह, and क, ख, ग, and घ are marked respectively in the east, and other seven quarters; compare line 373.

406. Filling up (the *kośā*)[1] with pure water, he (the architect) should worship (the presiding deity of the dome-nail) with perfumes and flowers.

407. He should put on ornaments as before and offer dishes, etc. (to the deity).

408. The offering should be made to consist of sixteen varieties[2] together with the perfume (*gandha*) and the unhusked rice (*akshata*).

409. On the top of a domed edifice the foot-mark of the goose should be made.

410. 'I bow to Thee, may it please Thee to save the master, the kingdom, and the village, etc.' (should be the prayer).

411-412. With water mixed with mortar and molasses, and also with many bricks the dome-nail (*stūpi-kīla*) should be firmly fixed, and thereafter he (the architect) should do as directed before.

413. The dome should be installed (specially in the temples) of Brahmā, Vishṇu, and Maheśvara (Śiva).

414. This being done, it would cause fruition and beatitude in the houses of the votaries and kings.

415-416. Wherefore, if it be not done, the master, the man and wife, the king, and the queen would suffer from some disease ; therefore, this (installation of the dome), which gives all happiness, should be made in royal palaces and also in temples.

417-418. One should enter into his own house amidst music, singing and all other (auspicious) sounds, being accompanied by the Brahmans, conveyances, a well-wishing preceptor, artists and others, and elephants, and horses.

Thus in the *Mānasāra*, the science of architecture, the eighteenth chapter, entitled :

The general features of edifices.

[1] A vessel wherefrom water is taken for worship.

[2] See note 1 page 173.

CHAPTER XIX

THE ONE-STOREYED BUILDINGS

1. The setting up and the general features of the one-storeyed buildings will be stated here.

2. *Jāti, Chhanda, Vikalpa,* and *Ābhāsa* are the four classes (into which they are divided).

3-5. The edifices measured in the former[1] cubit are known as the *Jāti*; the *Chhanda* (class of buildings) should be (measured) in the three-quarter-cubit, the *Vikalpa* in the half cubit, and the *Ābhāsa* in half of that[2] (i.e., in the quarter-cubit): thus the edifices, etc., (i.e., including other smaller buildings) should be measured.[3]

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[1] Obviously the first kind of cubits made of 24 *aṅgulas* and known as the *Kikshu*; the other cubits being the *Prājāpatya* of 25 *aṅgulas*, the *Dhanur-mushṭi* of 26 *aṅgulas*, and the *Dhanur-graha* of 27 *aṅgulas*, (vide II, 50-52).

[2] This construction, though not impossible, is not very usual, but is necessitated by the natural sequence. As, however, only the cubit, and the half cubit called *Vitasti* (span) are recognised as separate units, the three-quarter cubit and the quarter-cubit would be rather undesirable as units; on the other hand, the four kinds of cubits (see note [1]) for the four classes of buildings would be more fitting, but that interpretation is not possible here because the second, third, and fourth classes are obviously meant to imply the smaller types of buildings.

[3] As a more general rule the *Prājāpatya* and the *Dhanur-mushṭi* cubits are preferred for measuring buildings with the option of using the *Kikshu* type for the measurement of all objects (vide II, 54-58).

6. These (buildings) are (again) divided into three classes, (namely), the *Sthānaka* and others, for the purpose of verification by the formulas called the *Aya* and others.[1]

7-9. That (class of buildings) is called *Sthānaka* where the standard of measure (for the whole building) is taken to be its height; where the standard of measure is taken to be its length that class will be called *Āsana*; (and), on the other hand, if the standard of measure be the breadth (of a building) it would be called *Śayana.*

10-11. Of these three classes of edifices the *Sthānaka* (class) is (otherwise) called *Asaṁchita*, the *Āsana* (class) *Saṁchita*, and the *Śayana* (class) *Apasaṁchita.*

12-13. (Again) the *Sthānaka* and other (classes of buildings) when primarily intended to be idol-bearing edifices (i.e., temples) should be made (i.e., classified) in accordance with the respective (postures of the) idols (installed therein)[2]; if the reverse be done it would cause destruction.

14-15. A building is called male when it is equiangular or circular, and female when it is rectangular.

16-17. (Generally) the images of the male deities should be installed in the male (class of) temples, and of female deities in the female temples; but in the female temples the images of the female deities or of the male deities may be installed.

18-19. The breadth, the height, and the division (of the height) of one-storeyed buildings of the smallest and other types should be as directed before.

20. The one-storeyed buildings are divided into eight kinds; their comparative measurement is stated here.

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[1] Namely, Vyaya, Ṛiksha, Yoni, Vāra, and Tithi (otherwise called Ṛāśi or Aṁśa). See IX, 88-89, 90-93 and the writer's *Dictionary* under Shaḍ-varga (pages 600—611).

[2] That is, in the *Sthānaka* class of buildings the idol should be in the erect posture, in the *Āsana* class in the sitting posture, and in the *Śayana* class in the recumbent posture (see the writer's *Dictionary*, pages 397—398, 730, 73—75, 570).

21. Of the eight parts of the height the plinth (*masūraka*) should be one part.

22. The height of the pillar (*aṅghri*) should be two parts, and the entablature (*mañcha*) should be made of one part.

23. The neck (*kandhara*) should be made equal to that (i.e. one part), and the height of the spherical roof (*śikhara*) twice that (i.e. two parts).

24. The height of the small dome (*stūpikā*) should be half of that (i.e. one part), (of which) the face (*vaktra*) is said to be of six kinds (? ribs).

25. The length of the building being divided into eight parts, seven should be given to the width of the platform (*vedi*).

26. The same being divided into four parts, three should be given to the width of the neck (*grīva*).

27. The extent of the platform (*vedi*) should be in a line with the ends of the roof (*śikhara*) and the plinth (*ālambana*).

28. The plinth (*ālambana*) being (divided into) three parts, the width of the middle vestibule (*nāsi*) should be one part.

29. The projection (of the plinth) should be equal to three-fourths or half of that (i.e. the plinth).

30. The width of the middle vestibule (*nāsi*) should be divided into thirty-four parts.[1]

31. Its height should be three-fourths, one-fifth, or one-third (of its width).

32. The neck of the vestibule should extend from above the stationary roof (*sthitha*) which extends to the root of the pentroof (*lupā*).

33. This upper part of the neck should be equal to, or three-fourths, or half of that (i.e., the neck itself).

34. Equal to that should be the height of the crowning finial (*mauli*) extending suitably up to the bridge (*pālikā*).

35. The measure of the vestibules on the sides should be half of that of the middle vestibule.

[1] A full account of the distribution of these parts is missing here.

36. The forefaces of all vestibules should be ornamented with the female crocodile (*kimbarī*).

37. The length of the vestibule (*nāsi*) being three parts, that of the adytum (*kukshi*) is known to be one part.

38. It (the adytum) should be furnished with painted images of demons, etc., and all kinds of ornaments.

39. Petals (of flowers) should be fixed (as decoration) to the upper part of the plinth and should be furnished with all (other) ornaments.

40. The upper part (of the building) should be furnished with leaves and decorated with decorative plates.

41. The plinth (*ālambana*) should be ornamented with leaves in cup (*karoṭi*) patterns.

42-43. On the bridge part (*pālikā*) and the plinth part (*ālambana*) lines of mirrors should be made in circular patterns as decorative ornaments, and the rest should be made as stated before (by the ancients).

44. The height of the platform is stated to be of one part (when) the height of the neck is of three parts.

45. The assemblage of mouldings, including the fillet on the upper part of the neck, should be equal to that (i.e., one-third of the neck).

46–47. The same (being the height and the component parts), there should be the plinth (*ālambana*), furnished with the beam (*gopāna*), and the other ornaments; the height of the platform (*vedi*) should be equal (i.e., the same as before), and be ornamented with the small vestibule.

48. As an alternative, the height (of a building) may be divided into ten parts (which should be distributed as follows).

49–51. The plinth should be one-and-a-quarter parts, the height of the pillar twice that (i.e., two-and-a-half parts); half of that (i.e., one-and-a-quarter parts) should be the entablature, and the height of the neck two parts, the height of the spherical roof should be equal to that (i.e., two parts), and the height of the finial (*śikhā*) half of that (i.e., one part).

52. The side tower (*karṇa-harmya*) should be constructed of one part above the entablature.

53. Above that (entablature) the neck should be tastefully made of one part, as before.

54-57. The (whole) breadth of the attic being divided into six parts, one part should be given to the side pavilion; two parts to the central pavilion; one, two or three rods to the projection or portico, and one part to the chain (*hārā*) together with the window, (which is) placed between the two, namely, the central pavilion and the side pavilions.[1]

58-60. Its (the attic's) height should be divided into seven parts; (of those) one part should be the height of the platform (*vedikā*); above that the neck should be one part and a half, and the height of the head (*mastaka*) three parts; and half of that should be the height of the small dome (*stūpikā*): this is known as (the comparative measure of) the attic.

61. The same (being the height and the component parts), there should be furnished the plinth, but the attic should be without those (i.e., pavilions).

62-63. Above that the platform (*vedikā*) should include (two compound mouldings, namely,) the ear-like fillet (*karna-kampa*) and the lotus-like fillet (*abja-kampa*); the divisions of the height of the platform are otherwise specified here (i.e. below).

64-66. The same platform being divided into nine parts, the fillet (*vājana*) at the bottom should be two parts and the cornice (*karṇa*) above three parts; above that the fillet (*kampa*) should be one part, and the petal (*dala*) and the fillet (*vājana*) two parts.

67-69. The length of the platform (*vedi*) being divided into four parts, the middle compartment (*madhya-koshṭha*) should be one part; this compartment (*koshṭha*) should be furnished with a vestibule (*nāsikā*), or the vestibule and window (*nāsikā-pañjara*); the rest should

[1] The attic is formed of little pavilions, those on the corner are called *karṇa-kūṭa*, those in the middle are *śālā*, between these two are placed *hārās* which are furnished with small windows called *pañjara* (see the writer's *Dictionary*, pages 118—119).

be constructed as said before, (the whole) being decorated with all ornaments.

70-73. As an alternative, the height of the edifice being divided into twelve parts, the plinth should be one part and a half, and the height of the pillar three parts; half of that (i.e., one-and-a-half parts) should be the height of the entablature, and the height of the neck three parts, the height of the spherical roof (*śikara*) two parts, and that of the small dome one part.

74. Above the entablature should be left two parts for interspace (*antara*) connected with the entablature.

75-78. Of the ten parts of height (of the whole building) the height of the base (*vedi*) should be one part, the height of the pillar three parts, and the capital (*mastaka*) three-fourths part, the height of the entablature (*vedikā*) one-and-a-quarter parts, the height of the neck one part, the head (*śiras*) two parts, and the dome (lit, pitcher, *kumbha*) above one part.

79. The upper portion of the neck of one part should be fully decorated as before.

80-83. As an alternative, the height of the edifice being divided into fourteen parts, the plinth should be one and three-fourths parts, and the pillar twice that (i.e., three-and-a-half parts), half of that (i.e., one and three quarters parts) should be the height of the entablature, and the height of the neck four parts; half of that (i.e., two parts) should be the height of the roof, and above that the small dome should be one part.

84-86. A suitable base should be made by the one part above the neck set for (such) a base; by the two parts above that (the base) should be made (as a decorative device) the turret, etc.; the remaining portion is stated to be for the neck which should be ornamented as before.

87-92. As an alternative, the height of the edifice being divided into sixteen parts, the plinth should be two parts, the height of the pillar four parts, and the entablature two parts; the upper portion (in this case) should be differently made[1]; (but) the base

[1] See lines 96-100 and also the footnote under lines 101-106,

may be four parts (instead of two) and the entablature two parts (as before); the height of the neck should be equal to that (i.e., two parts), and the height of the roof four parts; half of that (i.e., two parts) should be the height of the small dome; the eighth variety is stated hereafter.

93-95. The width of the main edifice (i.e., at the bottom) being divided into eight parts, the width at the upper portion is known to be divided into six parts, (and) the upper portion should be made in conformity with the (main) edifice and be furnished with all ornaments.

96-100. The same upper portion being divided into eight parts, the height of the pillar should be two parts; half of that (i.e., one part) should be the height of the base; equal to the latter (i.e., one part) should be the height of the neck; two-and-a-half parts should be the height of the roof, and one-and-a-half parts the height of the top (i.e., the small dome, *śiras*); the height at the upper portion of the pillar being divided into four parts, (its) base should be one part and the rest should be as before; that is what is prescribed by those who were conversant with the eight-fold divisions.

101-106. There being four-times-eight (i.e., thirty-two) parts from the plinth to the small dome (of an edifice), the plinth should be four parts, the pillar one part more (i.e., five parts), the bridge (*pālika*) extending to the entablature one part, the height of the entablature four parts, the upper pillar five parts, (and) the upper platform two parts, the platform one part, the neck two parts, the roof four parts, and the small deme two parts; it should be decorated (as before) with turrets, etc.[1]

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[1] It would appear that in the seventh and the eighth varieties there are two pillars in each, one being above the other (*cf.* lines 88, 96, 102, 103). Another point should be noticed: in the eighth variety there are stated to be as many as thirty-two parts (although the total of the several parts comes to only thirty), thus in the eight varieties the increment in the division is not gradual: 1st 8 parts (line 21), 2nd 8 parts (line 46), 3rd 10 parts (line 48), 4th 10 parts (line 61), 5th 12 parts (line 70), 6th 14 parts (line 80), 7th 16 parts (line 87), and 8th 32 parts (line 101).

107. These are said to be the eight kinds of one-storeyed buildings.

108-112. At present *Vimāna, Harmya, Alaya, Adhishṇaka, Prāsāda, Bhavana, Kshetra, Mandira, Āyatana, Veśma, Griha, Āvāsa Kshaya, Dhāman* invariably, *Vāsa, Geha, Āgāra, Sadana, Vasita,* (*Gṛiha*), *Nilaya, Tala, Koshṭha,* and *Sthāna:* all these are synonymous.

113. Of the three parts of the breadth of the *Vimāna* the adytum should be one part.

114. Of the five parts of the breadth of the *Harmya* the adytum should be three parts.

115. Of the seven parts of the breadth of the *Geha* the width of the gutter (*nālī*) should be four parts[1].

116. The width of the gutter should be four parts when the breadth of the *Gṛiha* is five parts.

117-119. Of the eleven parts of the width of the *Kshaya*, the breadth of the compartment (*koshṭha*) should be six parts; of the thirteen parts of the breadth, the drain (*nālika*) and the adytum (*gṛiha*) should be seven parts, and of the fifteen parts of the breadth the adytum (*garbha-gṛiha*) should be nine parts.

120. Of the two parts of the width, the breadth of the vault (*tuṅga*) should be one part.

121. The remainder should be the width of the wall which should surround the adytum.

122-124. The compartment should be made in all the storeys up to the twelfth, the main (part of the) house reaching the last storey, and in the case of temples the adytum (running) up to all the storeys and the gutter, etc., being as stated (before), the breadth of a building should be (divided into proportionate parts) as (stated) before.

125-126. In all (kinds of) buildings, the width of the wall being divided into twelve parts, five parts should be given to the outside and seven to the inside.

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[1] It should be noticed that no mention is made of those names which are included between *Harmya* and *Geha*.

127-128. Between those two (sides of the wall) and at the middle of the foot of the door is stated to be (placed) the external pillar separated (from the internal column) by a large interval (*antarita*).

129-131. This interval between columns admits (of three varieties) namely, small, intermediate, and large; the best architect should employ this discreetly in conformity with the door of the edifices of the small, intermediate, and large types.

132. The inside pillar may as well be omitted but the outside one must be constructed.

133-134. The height of the (door) pillar of edifices should be divided into five, six, (or) eight parts; of these the height of the door alone should be less by one part.

135. Half of that (pillar) should be the breadth of the door in the middle of the temples of Gods.

136-138. The width (diameter) of the door pillar fit for the smallest type of buildings should begin from seven or nine *aṅgulas* and be increased by two *aṅgulas* to one cubit, consisting of three kinds in each of the three types, namely,the smallest, the intermediate, and the largest.

139-142. The width (diameter) of the door pillar in the intermediate type of buildings should begin from twenty-four or twenty-five *aṅgulas* and end at forty or forty-one *aṅgulas*, the increment being by two *aṅgulas*, consisting as before of three kinds, namely, the smallest, etc.

143-145. The width (diameter) of the door pillar in the largest type of buildings should begin from two cubits and be increased by three *aṅgulas* to three cubits, consisting of the three kinds, namely, the smallest, etc.

146. But some architects make the width of the door pillar proportionate to its height (in place of the above specification),

147–148. The width of the door pillar should be two cubits and its projection[1] should be equal to that (i.e. two cubits), or half, or one-third.

149. The two (door) pillars should be equal to the length of the door and be joined by a solid lintel.

150. With (proportionate) length and breadth the pillar should be discreetly constructed.

151–152. There should be two door panels in the buildings of the smallest, the intermediate and the largest types, belonging to the gods, the Brahmins, the Kings, the Chiefs, and others.

153. A bolt should be furnished with nail inside or outside (of the door).

154. The door pillar also should be furnished with all decorative devices on the outside.

155. The image of the door gods should be carved on the top and sides of a door.

156–157. It is a defect to make the deities on the panels (*kavāṭa*) touching one another; it should, therefore, be avoided by the architect by making a pillar in between (i.e., the two halves of the door).

158–159. (The height of the door) from the plinth to the door-lintel should be divided, according to rules, into five parts, where the images of gods should be carved and a drain should be made on the outside.

160. In case of (real) need a smaller gutter should be made where the entablature is situated.

161. The breadth, length, height, and the length along the plumb-lines will now be described[2].

162–163. Eight, ten, twelve, fourteen, and sixteen *aṅgulas* are said to be the five kinds of width of the gutter.

[1] See Bahala, Bahula and Bāhulya in the writer's *Dictionary* (pp. 438, 439, 440).

[2] For different kinds of measurement see the writer's *Dictionary* under Māna (pp. 500-501).

164. The length up to the dome is said to be of five kinds from half a cubit to two cubits and a half.

165–166. This (measure) should be for the smallest (type of) buildings; the gutter should be fittingly constructed on the left, right, or front of the middle-part.

167–168. With three parts more than the aforesaid measure, the tooth-shaped gutter is seen to be used in the largest and the intermediate types of buildings.

169. The height of the gutter should be equal to the height of the basement.

170. Of the three parts in the height, one part at the bottom should be the projection of the front.

171–172. The width at the bottom of the gutter being divided into five parts, the width at the top should be three parts, and the baluster (*ālambana*) five parts.

173–174. The height of the bud (*kuḍmala*) should be three parts, and the lotus (*padma*) should be made of one part; above that the fillet (*vājana*) should be one part, and it should be fittingly employed as a decorative device.

175. The door and portico, circular or otherwise, should be beautifully decorated.

17-1768. A hole should be made, the width of which at the bottom should be one, two, three, four, or five *aṅgulas*, and the height proportionate to it; (and) the width of the hole at the top should be one-fourth or one-third of that at the bottom.

179-180. At the bottom should be (fitted) a raised lion-face (device), thereafter should rise up the projection; the expert architect should make the plantain-shaped gutter resembling the flower (of the plantain).

181. The building with circular head (*śirsha*), finial (*śikhā*) and neck (*grīva*) is called the *Vaijayantika*.

182. The same with an attic pavilion (*karṇa-kūṭa*)[1] is known as the *Bhoga*.

183. The same furnished with a portico (*bhadra*) in its middle is called the *Śrīviśāla*.

184. The same with an octagonal top (*śirsha*) is known as the *Svasti-bandha*.

185. The same with a quadrangular roof (*śikhara*) is called the *Śrīkara*.

186. The same with an oval roof (*śikhara*) is called the *Hasti-pṛishṭha*.

187. If its head (*śiras*) and neck (*grīva*) be hexagonal it is called the *Skandha-tāra*.

188-190. That is called the *Keśara* of which the portico (*bhadra*) at the middle is broad, and which is furnished with a side attic pavilion (*karṇa-kūṭa*), and the limbs, the pavilion (*śālā*), portico (*bhadra*), vestibule (*nāsi*), head (*śiras*) and neck (*grīva*)[2] are circular or square.

191. The buildings of these shapes and measures are called by those names.

192-195. Thus in the edifices are described the central portico (*madhya-bhadra*), the attic pavilions (*śālā*); compartments (*koshṭha*) in all directions (of the attic) connected with the pinnacle together with the (ornaments known as) chain (*hārā*), pendant (*śrānta*), vestibule (*nāsikā*), and windows (*pañjara*); all (edifices) should be furnished with platforms (*vedi*) and porticoes (*bhadra*)[3].

196-197. The length of the wall should, in order, be equal to, three-fourths, half, and one-fourth of the length of the edifice.

198-199. The front pavilions (*mukha-maṇḍapa*) of the three types, namely, the smallest, etc., should be (built) in front of the large (type of) temples.

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[1] See note under lines 54-57.

[2] See note under lines 54-57.

[3] See note under lines 54-57.

200-203. In the intermediate type of temples, the pavilion (*mandapa*) should be at the sides, one or two *daṇḍas* (rods of four cubits each) away, the plinth (*upaveśana*, literally, seat) should be proportionate to the temple; (and) in case of temples of the small type the pavilion (*maṇḍapa*) should be in front of them.

204-206. The width of the interspace (*antarāla*) between these two (i.e., the temple and the pavilion) should be from one cubit to half-a-cubit or three-fourths of a cubit, (but) in the case of big edifices (*prāsāda*) it (i.e., the interspace) may be one, two, or three *daṇḍas* (rods of four cubits each).

207-208. The dome (*kumbha*, literally, pitcher) may or may not be connected with the pillar and vestibule or window (*pañjara*), or with the attic pavilion (*śālā*) and window (*pañjara*), and should be fittingly decorated with arches.

209. The pillar should be, it is stated, decorated with one, two, three, or four elephants.

210-211. Or it (the pillar) should be attached to and made proportionate to the front door; and the steps in front of the door should be fully decorated with the trunk of the elephant.

212-213. In the case of the double pavilions the bottom should be equally ornamented, (but) in the case of other pavilions it should be decorated in a way which would make it beautiful.

214-215. In the case of the pavilion (on the part) above the entablature, it should be decorated with the turret; or what is called the interval on the attic (should be furnished) with the vestibule (*nāsikā*), the screen (*jāla*) and the window (*pañjara*).

216-217. In those pavilions, as in the temples (themselves), doors should be opened in the middle (of the front wall), (and) as before, they should be furnished with panels, and bolts should be fitted at the bottom of the pavilions.

218. The images of the door gods should be carved on the outside as well as on the two sides of those doors.

219. The images of Nandi, Mahākāla and the other door gods should be carved as directed before.

220. The image of the dancing Vināyaka (Śiva) is said to be carved on the southern compartment of the (door) pavilion.

221. In the northern compartment of the pavilion the image of Durgā in the erect posture should be made.

222. The image of the Vyāna-Dakshiṇā (Kāli with projecting tongue pressed between the teeth) should be carved on the middle compartment to the right of the (main) temple.

223. Above that, on the compartment in the neck part, should be the image of Vīrabhadra in a singing posture.

224-225. The self-revealing Phallus (of Śiva) should be carved in the middle compartment to the west in the ground floor; or the image of Ardha-Nārīśvara (Śiva of half male and half female form) or of Vishṇu, in the erect posture, should be installed therein.

226. Above that, on the compartment in the neck part, should be the sitting image of Keśava, Nṛisiṁha, and Achyuta (Vishṇu).

227. The erect image of Brahmā (literally, four-faced one) should be in the northern compartment of the ground floor.

228. Above that, on the compartment in the neck part, should be (the image of) Nārada or the Lotus-born (Brahmā).

229-230. On the middle compartment in the neck region (*gala-deśa*) to the east (front) should be the image of Guha sitting on an elephant's back; or therein the image of the moon (literally, lord of night) is said to be carved in the sitting posture, with or without all his wives (i.e., the twenty-seven stars).

231. Sixteen images of Indra should be made around the southern (right side) door.

232-233. The image of the bull should be placed at the corners above the entablature; each of the corners should be furnished with one or two images of bulls at its top.

234. Temples consisting of one or more storeys should be furnished with images of gods as prescribed by the ancient teachers.

235-236. This is fit for the Śiva temples, and, as for the temples of other gods, it (the image) should be made according to one's taste (or discretion), which may possess one or more storeys and be furnished with all those doors.

237. We may, otherwise, describe the carving of images of gods in the Vishṇu temples.

238. The images of Chaṇḍa and Prachaṇḍa, together with their consorts, should be made on the door to the south of the pavilion (of the Vishṇu temples).

239. In the northern part of the (main) temple should, as before, be the images of gods mentioned above.

240-241. The image of the lion or of Garuḍa (king of birds) should be made as said before at the four corners; the image of the lion should be in the sitting or recumbent posture, and that of the Garuḍa in sitting posture with palms joined together in front.

242-243. The image of Nṛisiṁha on snouted hog, and Keśava on horseback should be installed at the four directions, namely, the east, etc., at the neck part of the aforesaid buildings of single storey.

244-247. In the two-storeyed building, in the neck part, should be made the image of Achyuta (Vishṇu) facing the north, (the image of) Śrīmādhava facing the east direction, Narahari facing the south, and Nārāyaṇa facing the west quarter.

248-249. In the third storey, at the neck part of the temple, should be carved the playing image of Janārdana facing the north, and the image of Śrīdhara facing the east direction.

250-251. (Similarly) in storeys higher than that (i.e., the preceding one) at the upper (i.e., neck) part should be the images of Vāsudeva or other epithets (of Vishṇu) facing the north, and the image of Aniruddha facing the west direction.

252-253. The Buddha and the Jain temples should be constructed in the same way as said above, and on the upper parts of those temples, the images of their (different) gods should be made in order

254. The same rules should be applied to the temples of all other god and goddesses.

255. The images of gods in all kinds of temples are stated to be accompanied by the images of their vehicles (i.e., riding animals).

256. The images on the entablature should be in the sitting or the recumbent posture.

257. If the edifices are constructed, as directed above, they will be the source of all prosperity.

258-259. It has been said by the ancients that the one-storeyed buildings may be furnished with an extra plinth for the sake of beauty, otherwise (all) buildings may be furnished with a plinth (as a general rule).

260-263. All buildings should thus be tastefully ornamented with various pillars, platforms, basements, and entablatures; if there be anything more or less (than what is prescribed) it would cause destruction; all parts should, therefore, be made as directed above for the sake of prosperity.

Thus in the *Mānasāra*, the science of architecture, the nineteenth chapter, entitled:

The description of the one-storeyed buildings.

CHAPTER XX

THE TWO-STOREYED BUILDINGS

1. I shall now briefly describe the ornaments of the two-storeyed buildings.

2. The breadth and the height of the (two-storeyed) edifice should be as before.

3-8. From the plinth (*upāna*) to the small dome (*stūpi*) the height should be divided into twenty-eight parts: (of these) the height of the plinth (*ādhāra*) should be three parts, and that of the pillar six parts; the height of the entablature should be four parts and (that of) the (second) pillar above five parts; above that, upon the entablature (*mañcha*) of the (second) pillar, the height of the platform (*vedikā*) should be one part; the height of the neck should be two parts and that of the spherical roof (*śikhara*) four parts; the height of the small dome (*stūpi*) above that should be made of three parts.

9-14. The height (from the plinth to the pinnacle) being divided into thirty-one parts, the base (*masūraka*) should be four-and-a-half parts; seven parts should be the height of the pillar, and half of that (i.e., three-and-a-half parts) the height of the entablature; the (second) base above that should be two-and-a-half parts, and the height of the small pillar four parts; half of that (i.e., two parts) should be the height of the entablature, and half of the latter (i.e., one part) the height of

the small platform (*vedikā*) ; the height of the platform (*vedi*) should be twice that (i. e., two parts), and the height of the spherical roof (*śikhara*) four parts; the height of the small dome (*stūpi*) should be two parts; this is the second kind of two-storeyed buildings[1].

15-17. Of the same (height of thirty-one parts) the (second) base above the edifice should be one part and a half; the small pillar above that should be five parts, and it (the roof) should be furnished with the side-tower (*karṇa-harmya*), etc., and the rest should be made as before; this is the third kind of two-storeyed buildings.

18-24. The height (from the plinth to the pinnacle) should be divided into sixteen parts, (of which) the (first) base (*masūraka*) should be one part and a half; the height of the pillar should be three parts, and the entablature one part and a half; the (second) base above that should be one part, and the small pillar above that two parts; the height of the (second) entablature should be one part, and the (second) base (*masūraka*) above three-fourths of a part; the height of the small platform (*vedikā*) should be one-fourth of a part, and the height of the neck one and one-fourth parts; the height of the head (*śiras*) should be two parts and a half, and the height of the spherical roof (*śikhara*) one and one-fourth parts; the fourth kind of two-storeyed buildings is thus described.

24-26. Of the same (height of sixteen parts) the spherical roof is known to be the same ; the projection (*ālambana*) should be made of one part and a half, and furnished with the beam (*gopāna*) and other ornaments ; the rest should be made as said above ; this is said to be the fifth kind of two-storeyed buildings.

27-33. Of the eleven parts of the height, the (first) base (*masūraka*) should be one part; the height of the pillar should be three parts, and that of the entablature one part; above that should be the (second) plinth, and equal to that should be the (second) base (*masūraka*) ; the height of the (second) pillar should be twice that, and the height of the entablature half of the latter ; the height of the platform

[1] The distribution (lines 9-14) does not make up the total.

(*vedi*) should be equal to that, and the height of the neck one part; the height of the spherical roof (*śikhara*) should be two parts, and that of the small dome (*stūpa*) one part; the sixth kind of two-storeyed buildings is thus described.

33-41. The seventh kind will now be described: of the eleven parts of the height, the (first) base (*masūraka*) should be one part; the height of the pillar should be two parts, and the entablature one part; above that, the (second) base (*masūraka*) of three-fourths part should be made solid; the height of the (second) pillar should be twice that, and the height of the (second) entablature half of the latter; above that the (third) pillar should be one and one fourth parts, and the height of the entablature half a part; the height of the platform (*vedikā*) should be one-fourth of a part, and the height of the neck twice that (i.e., half a part); the height of the spherical roof (*śikhara*) should be one part, and that of its finial (*śikhā*) half of that: the seventh kind of two-storeyed buildings is thus described; there should be three pillars and the side tower.

42-43. The height being divided into one part more (i.e., twelve parts), the pedestal should be made of one part at the bottom above the base; this is known as the eighth kind of two-storeyed buildings.

44. The projection to be measured in the rod (*daṇḍa*) measurement is described here.

45. The projection should be outside of the aforesaid breadth as well as all around.

46. The projection is known to be one, two, or three rods (*daṇḍa*).

47. Otherwise it should be one, two, or three cubits.

48-49. (Another) five varieties of projection should begin from three or four cubits and end at eleven or twelve cubits, the increment being by two cub

50-51. (Yet another) five sets of projection should begin from five or six cubits and be increased by two to thirteen or fourteen cubits.

52. It (the projection) should fittingly be made in (buildings of) the three types, namely, the smallest, the intermediate, and the largest (both) as regards size and volume.

53. Otherwise the projection may be equal to or half of the width of the building.

54. Of those divisions of the width, the pinnacles (*kūṭa*) should be made of one part each.

55. The width of its chain (*hārā*) should be one-fourth, or half a part.

56. The width of the middle pavilion (*madhya-śālā*)[1] should be two or three parts.

57-58. On the upper storey (i.e., attic) of an edifice should be arranged the (top) pillar and outside pinnacle, etc., or something like the side-tower, or (simply) the entablature together with (bare) inter-space.

59-61. The diameter of the pillar on the second storey should be four or five *aṅgulas*; and that diameter of the (upper) pillar being divided into three, four, five, six, seven, or eight parts, the diameter at the upper portion (of the pillar) should be less by one of these parts.

62-63. At the top of the pavilion (on the attic) there should be two pillars on the exterior side, the interspace at the middle, and (the whole attic) decorated with vestibules, windows, pavilions, domes, and pillars, etc.

64. It (i.e., the edifice) should be ornamented at the bottom and at the top with arches, niches (*nīḍa*) and porticoes (*bhadra*).

65-66. It (the edifice) should be furnished with various basements and pillars, with various beams (*gopāna*) and decorated with small vestibules (*nāsi*).

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[1] See note under lines 54-57, chapter XIX.

67. Its special feature is its ante-chamber (with one or more closed sides) (*ardha-śālā*), and it is (also) furnished with a top pavilion.

68. At its upper part, up to the end of the entablature, it should be ornamented with vestibules.

69. The pinnacles (*kūṭa*) should be square and there should be vestibules (*nāsikā*) at the interspaces.

70. The projection of the middle portico (*bhadra*) should be one, two, three, or four rods (*daṇda* of four cubits each).

71. There should be four pavilions (*śālā*), four pinnacles (*kūṭa*) and eight chains (*hārā*) with windows (*pañjara*).

72. The band (*veśana*) round the upper pinnacle, etc., should be one or half a rod (*daṇḍa*).

73. At the two sides of the middle compartment, there should be the antechambers (*ardha-śālā*).

74. Above that at the middle should be a vestibule (*nāsi*) and at its sides should be the front vestibule (*vaktra-nāsi*).

75. At the sides of the two pavilions small vestibules should be constructed for decorative purposes.

76. The pinnacle, the compartment, and all other members should be tastefully ornamented.

77. The side towers should be constructed as directed above, and the rest should be made as before.

78. The (last two, namely, the) seventh and the eighth kinds of two-storeyed buildings will now be described in detail.

79. Their height should be two and a half times or thrice the breadth.

80. An additional pavilion (*maṇḍapa*) should be constructed in front of the front pavilion (*maṇḍapa*).

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[1] See note under lines 54-57 chapter XIX.

81. In these buildings the doors or windows should be constructed in the middle.

82. At the middle of the south should be a door and in front of it should be the mid-pavilion (*madhya-maṇḍapa*).

83. They should be furnished with four doors, and with staircases in front.

84. The floor should be solid all over and be decorated with pinnacles (*kūṭa*) and chambers (*koshṭha*), etc.

85. The basement and plinth (*masūraka*) should be furnished with pedestals.

86. Above that the pillar (*pāda*) and the entablature (*mañcha*) should be furnished with three peacock's tails patterns (*barha*).

87. The projection at the end of the edifice should be measured proportionally as (stated) before.

88-89. The height of its pillar should be divided into six parts; the circular wall in the interior above the entablature should be made of one part less (i.e., five parts).

90. It (i.e., the edifice) should be furnished with the side-tower (*karṇa-harmya*), etc., and be decorated with all ornaments.

91. The circumambulating staircases for ascending purposes should be beautifully constructed.

92. The rest should be made as before with images of all gods in the building.

93-95. *Śrīkara, Vijaya, Siddha, Paushṭika, Kānti, Prabhūta, Svastika,* and *Pushkala* : these are the names of the eight edifices commencing with the first; the images of the aforesaid gods should be made in all these edifices.

96-98. Or, (to be clear), in the Vishṇu temple, the image of the god Janārdana should be at the neck (*gala*) part in the east; in the

south should be the image of Vāmana (dwarf Krishṇa) or of Nara-siṁha (man-lion); (the image of) Keśava is said to be in the west, and of Śrīdhara in the north.

99. Or the image of Brahmā (lit. grand-father) should be (generally) in the buildings of the Northern (*Nāgara*) and other styles.

100. The wise (architect) should carve the images of all the door-gods as before.

101-104. The images should be (made) likewise in the Śiva temple, especially in the (attached) pavilion; the image of the god Kāla (death) is said to be in the north, and the images of Kshetrapālas as well as of Kārtikeya (lit. six-faced) should be carved on the ascending steps at the base of the main edifice as also at the entrance of the side-tower (*karna-harmya*).

105. Images of gods should be made, as before, in all kinds of temples.

106. Any addition or omission should be in accordance with the directions of the science of architecture (*śāstra*) mentioned above.

107-110. The two-storeyed buildings should be (horizontally) square, round, octagonal, circular, or oval; and vertically (lit. in length) should be furnished with the head (dome) and the neck; and the ornaments, etc., should be as stated before.

111-114. By the end of the chain (*hārā*) should be the balcony made of one or two parts, the portion above the platform (*mañcha*) should be covered, and there should be also the entablature; and for ascending the staircases should be constructed from the middle of the base of the buildings with such parts (measurement) as would make them beautiful.

Thus in the *Mānasāra*, the science of architecture, the twentieth chapter, entitled:

The description of the two-storeyed buildings.

CHAPTER XXI

THE THREE-STOREYED BUILDINGS

1. The setting up and the general features of the three-storeyed buildings will be described now.

2-3. Of the six parts of the height of the edifice (*vimāna*), the plinth (*masūraka*) should be one part and a half; the height of the pillar should be twice that (i.e., three parts), and the height of the entablature half of that (i.e., one part and a half).

4-8. The height of the upper pillar should be less than the height of the main pillar by one part; half of that should be the height of the entablature, and the base of the pillar should be twice the upper pillar; half of that should be the pillar above, and half of the latter should be the height of the platform (*vedika*) thereof; the upper fillet (*kampa*) should be twice that, and the height of the neck (*grīva*) two parts; and the remainder at the top should be the height of the finial (*śikhā*) which should be furnished with all ornaments.

9. Above the roof (*prachchhādana*) should be a column and it (the roof) should be decorated with the side-tower (*karṇa-harmya*), etc.

10. The division of the width and height of these (three-storeyed) buildings should be made as aforesaid.

11. The smallest type in the three-storeyed buildings is known as *trikānta*.



12-21. As an alternative, the height of the three storeys should be divided into forty-nine parts: (of these) the base should be four parts, and the height of the pillar twice that (i.e., eight parts); the entablature (*mañcha*) should equal to the base (i.e., four parts), and the cavetto (*vapra*) above the entablature should be half a part; the height of the pillar above should be six and three-fourths parts; above that the height of the entablature should be one part and a half; above that the cavetto (*vapra*) should be half a part, and the pillar above that six parts; the entablature (*mañcha*) should be two parts and a half, and the band (*paṭṭikā*) above half a part; the height of the platform (*vedikā*) should be one part, and that of the neck (*grīva*) three parts; the height of the spherical roof (*śikhara*) should be twice that (six parts), and the height of the finial (*śikhā*) three parts; the rest should be made as before; this is known as *Āsana* (type of the three-storeyed buildings).

22-30. As an alternative, the height of the three storeys should be divided into twelve parts; (of these) the plinth should be one part, and the height of the pillar two parts; half of that should be the height of the entablature, and three-fourths part the small pedestal (*pīṭhaka*) above; equal to that should be the base above, and twice that the height of the pillar; half of that should be its entablature above, and the plinth (*masūraka*) one part and a half; the height of the pillar should be one part, and that of the entablature (*mañcha*) half a part; half of that should be the height of the platform (*vedikā*), and twice that the height of the neck (*grīvā*); the head (dome) above should be twice the neck (*grīva*), and the height of the finial (*śikhā*) half of the head; the rest should be made as before: this is known as *Sukhālaya* (the pleasure-house).

31-32. If it be furnished with a straight pavilion with twenty-two pillars (*harita*)[1] at the region of its base it is called *Kesara*.

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[1] See the writer's *Dictionary*, pages 730, 471–472; and compare *Matsya-Purāna*, chapter 270, v. 13.

32-38. The *Kamalāṅga* is described here : there should be twenty-four divisions on its height and it should resemble the shape of the *Śrīkānta* ; it should have windows all over but it should be without any side-tower ; it should be furnished with various platforms (*vedikā*) and be decorated with various pillars ; at its four quarters, doors should be constructed with mixed (various) materials ; the wall (*kudya*) should be erected from the base, and above that should be furnished the pillar ; it should be decorated with all ornaments ; (thus) is described the *Kamalāṅga* (type of three-storeyed buildings).

39-40. The same if furnished with side-tower (*karṇa-harmya*), etc., and decorated with platforms (*vedi*) and all other ornaments, is known as *Brahma-kānta.*

41-49. As an alternative, the measure of the height being divided into thirty parts, the base should be two parts, and twice that (i.e., four parts) the height of the pillar; half of that (i.e., two parts) should be the height of the entablature, and the upper entablature (*mañcha*) equal to that (i e., two parts) ; the pillar above should be three and-a-half parts, and the entablature (*mañchaka*) one part and a half ; equal to that (i.e., one and a half parts) should be the upper entablature (*mañcha*), and the pillar above three parts ; the entablature should be one and one-fourth parts, and equal to that the upper entablature (*mañchaka*) ; half of that should be the height of the platform (*vedikā*), and equal to that the height of the neck (*kandhara*) ; the height of the head (*śiras*) should be twice the neck (*grīva*), and the remainder should be the height of the dome (*stūpi*) ; furnished with the sidetower (*karṇa-harmya*), etc., it is known as *Meru-kānta.*

50-52. The same (height, i.e., 30 parts) being increased by one, the plinth (*āsana*) at the bottom should be three parts ; twice that (i.e., six parts) should be the height of the pillar, and half of that the height of the entablature ; and the upper limbs should be constructed as before : this is known as *Kailāśa.*

53. The circumambulating staircases for ascending should be constructed in this building also as before.

54. These are said to be the eight kinds of three-storeyed buildings of the largest type.

55. The width should be divided into a suitable number of parts, (of which) the pinnacles (*kūṭa*) should be one part each.

56. The compartment (*koshṭha*) of the pavilion (*śālā*) in the middle (of the attic) should be constructed of two, three, or four parts.

57. The chain (*hāra*) (on the attic) together with the windows (*pañjara*) should be made of one, two, and three parts.

58. By one part all around the attic hall (*kūṭa-śālā*) should be made.

50. At the end of that on the part enclosed above should be a reservoir of water.

60. The projection of the portico (*bhadra*) is said to be one, two, or three rods (*daṇḍa*).

61. The chain (*hārā*) and the middle-pavilion made of one-third of the former should also be furnished.

62. They should be furnished with eight pinnacles (*kūṭa*), and eight compartments (*koshṭha*).

63. They should be decorated with sixteen chains (*hārā*), and all sorts of ornaments.

64. They should be furnished with various bases and decorated with various pillars.

65. They should be ornamented with various arches, niches (*nīḍa*, lit. nests), and platforms (*vedī*).

66. In the third storey should be the pinnacle (*kuṭa*) and compartment (*koshṭha*), etc., and the chain (*hārā*), etc., should be at the region of the neck.

67. (Images of) all gods should be made at the region of the main pillar.

68-70. The images of gods and goddesses (as recommended) by the ancients with all characteristic features mentioned above should be made with all care and discretion, in the region from above the neck (*grīva*) to the upper end of the finial (*śikhā*).

71-74. At the regions of the neck (*grīva*), head (dome) and top (pinnacle) of the Vishṇu, Śiva (Īśvara), and Jaina and other temples, the images of gods fully furnished as stated before with the peculiarities of the *Nāgara* and other styles[1] should be made at the eight quarters, namely, the east, etc.

Thus in the *Mānasāra*, the science of architecture, the twenty-first chapter, entitled:

The description of the three-storeyed buildings

[1] The *Nāgara* style is distinguished by its quadrangular form, the *Vesara* by its round form, and the *Drāviḍa* by its octagonal or hexagonal form (vide chapters LIII. 76, 100, 46-47; XXVI. 75; XVIII 90—102). According to the *Vishṇu-dharmottara* (part III, chapter 41), which is a supplement to the *Vishṇu-purāṇa*, paintings are divided into four classes, namely, the *Satya*, *Vainika*, *Nāgara*, and *Miśra*. The square form of the *Nāgara* style has been recognized here also. This point seems to have been missed both by Stella Kramrisch in her 'A treatise on Indian Painting and Image-making' (second edition, 1928, pages 8, 51) and by A. K. Coomaraswamy in his article 'Nāgara Painting' ("Rupam" no. 37, January, 1929). For references to the *Āgamas* and other works see the writer's *Dictionary*, pp. 299f.

CHAPTER XXII

THE FOUR-STOREYED BUILDINGS

1. The setting up and the features of the four-storeyed buildings will be described now.

2. The breadth, the height, and the division (*bhakti*) (thereof) should be made as before.

3–11. Of the nineteen parts of the height, the height of the plinth (*masūraka*) should be one part and a half; twice that should be the height of the pillar, and half of that the height of the entablature; the height of the pillar above that should be one and three-fourths parts or two parts; the height of its entablature should be one part, and the pillar (above) one and three-fourths parts; the entablature (*mañcha*) above should be three-fourths of a part, and the pillar above twice that; half of that (the latter) should be the height of the entablature, and the platform (*vedikā*) should be constructed of half a part; the height of the neck (*gala*) should be one part, and that of the head (*śiras*) two parts; half of that should be the height of the small dome (*stūpi*): from the bottom upwards should be made (these members); decorated with the side-tower (*karṇa-harmya*), etc., it is said to be the *Vishṇu-kānta*.

12–23. The height being divided into forty-two parts, the plinth should be three parts, and twice that the height of the pillar; the height of the entablature should be three parts, and the pillar above

six parts; the entablature (*mañcha*) should be two parts and a half, and the height of the pillar (above) four parts and a half; half of that should be the height of the entablature (thereof), and the pillar (above) three and three-fourths parts; the entablature (thereof) should be three parts, and the height of the platform (*vedikā*) half of that; the height of the neck (*gala*) should be two parts, and the height of the head (*mastaka*) four parts; and the height of the small dome (*stūpi*) should be two parts, and particularly at its (dome's) bottom the surrounding balcony (*alinda*) should be constructed of one part of the width; beyond that it (the balcony) should extend by one part the top of the main pillar; it should be enriched with the basement, and the other features, and be decorated with the side-tower (*karṇa-harmya*), etc.; and it should be furnished with all ornaments: this is said to be the *Chatur-mukha*.

24-32. The height should be divided into forty-one parts; (of this) the height of the plinth (*masūraka*) should be half a part; the height of the pillar should be five parts, and half of that the height of the entablature; the pillar above should be four parts, and the entablature two parts; the pillar above should be four and a half parts, and half of that the height of the entablature; above that the pillar should be three parts, and the entablature (*mañcha*) above one part and a half; the height of the platform (*vedikā*) should be one part, and that of the neck (*grīva*) twice that; the spherical roof (*śikhara*) should be four parts, and the remainder the height of the finial (*śikhā*); at the bottom should be made four doors and the other features as before; it should be decorated with all ornaments: this is called the *Sada-śiva*.

33-42. The height of the building being divided into thirty-two parts, the height of the plinth should be two parts, and twice that the height of the pillar; the height of the entablature (*mañcha*) should be four parts, and the base (*masūraka*) above one part; above that the pillar should be four parts, and half of that the height of the beam (or entablature) (*gopāna*); above that, the base (*kuṭṭima*) should be one part, and the height of the pillar two parts and a half; the height of the entablature should be one and one fourth parts, and the base

(*masūraka*) above three-fourths of a part; the pillar should be two and one-fourth parts, and the height of the entablature one part; half of that should be the height of the platform (*vedikā*), and the height of the neck (*gala*) one part and a half; the height of the spherical roof (*śikhara*) should be three parts, and half of that the height of the head (*śiras*); it should be decorated with the sidetowers (*karṇa-harmya*), etc., this is called the *Rudra-kānta*.

43-45. Of this (i.e., *Īśvara-kānta*) building (too), the lower parts (i.e, bottom) should be made as before; it should be furnished with four doors and a portico (*bhadra*) made of one part; and its plinth, etc., should be furnished in order: this is called the *Īśvara-kānta*.

46-56. The height should be divided into fifteen parts; (of this) the plinth (*masūraka*) should be three parts; the height of the pillar should be six parts, and that of the entablature three parts; equal to that should be the upper entablature (*mañcha*), and the cage-(pillar) (*pañjara*) above that one part; half of that should be the height of the entablature, and the upper entablature (*mañcha*) two parts; the height of the platform (*vedikā*) should be one part, and that of the neck (*gala*) two parts and a half; the upper pillar should be four parts, and the height of the entablature two parts; above that the entablature (*mañcha*) should be half a part, and the pillar four parts and a half; half of that should be the height of the entablature, and one-fourth of a part the entablature (*mañchaka*) above; the height of the platform (*vedikā*) should be one part, and that of the neck (*gala*) two parts and a half; the height of the head (*mastaka*) should be five parts, and the remainder should be the height of the pitcher (*kumbha*); it should be decorated with the side-tower (*karṇa-harmya*), etc.: this is called the *Mañcha-kānta*;

57-58. The same with a tower (*vimāna*) at the top (of the sanctuary) and a platform (*vedikā*), being decorated with all ornaments and the rest being made as before is (called) the *Vedi-kānta*.

59-87. The (whole) height being divided into twenty-six parts, the height of the plinth (*masūraka*) should be one part and a half; the height of the pillar should be eleven parts, and half of that the height

of the entablature; the base should be one and one-fourth parts, and the height of the pillar two parts and a half; half of that should be the height of the entablature, and the base (*masūraka*) above that one part; the height of the pillar should be two parts, and that of the entablature (*mañcha*) one part; the pillar should be two parts minus one-fourth, and half of that the height of the entablature; the height of the pillar should be one and one-fourth parts, and half of that the height of the entablature; above that the pillar should be one part, and the height of the entablature half a part; equal to that should be the height of the platform (*vedi*), and the height of the neck (*grīva*) one part; the height of the spherical roof (*śikhara*) should be two parts, and the remainder the height of the dome (*stūpi*). The (images of) gods should be installed at the bottom, middle, and top. On the top of that (edifice) should be made the roof resembling a sphere (*śikhara*) in the fourth storey. Of the suitable width four external parts at the bottom should be covered; or this (covered portion) may be half of or equal to the (whole) width; that should be decided in accordance with one's discretion. The base, the pillar, and the entablature: these three (principal) members, as well as the pinnacle over the pavilion on the attic (*śālā-kūṭa*) and the chain (*hārā*) should be fittingly made in their own place; it should be decorated (all over) from the bottom (upwards) with all kinds of ornaments befitting the main edifice; it (the building) should be furnished with the side-tower (*karṇa-harmya*), etc., made of two parts at the top; optionally, with the half of the width an enclosure may be made around; the side-tower (*karṇa-harmya*) should be made of one part, and inside that should be the reservoir of water; optionally, the expert (architect) should make the balcony (*alinda*) covering two parts; the two parts above (that) beyond the breadth should be covered as before; the end of that should be made as before; the parts are thus ornamented; it should be furnished with the side-tower (*karṇa-harmya*), etc., made of one part around; the balconies (*alinda*) should be made around with one part, and at their top should be the reservoirs of water; beyond that also all the limbs should be furnished with the side-tower (*karṇa-harmya*), etc.;

the length of the pavilion (*śālā*) at the middle (of the attic) should be made of two parts; the pinnacles (*kūṭa*) should be made of one part each, and with the remainder the chain (*hārā*) together with the window (*pañjara*): this is called the *Indra-kānta* of the smallest, the intermediate, and the largest types.

88. It should be furnished with pavilions (*maṇḍapa*) in the front as well as at the right side.

89-90. The staircases should be made from the middle of the front ascending towards the top in the case of human dwellings; they should be attached to the rest of the wall at its middle (proceeding) upwards.

91. The rest is directed to be as before; these are said to be the eight kinds (of setting of the four-storeyed edifices).

92. The temples of all gods should be (made) in the smallest, the intermediate, and the largest types.

93. In cases of others (i.e., residential buildings) the aforesaid measures should be fittingly made: such has been directed by the ancients.

94-97. With various bases, pillars, and roofs of many kinds; with pinnacles, nests (niches), pavilions, porticoes, and various sanctuaries supported by eight columns; with many small vestibules various attic windows, platforms, arches, large vestibules and windows; with (various) compartments, the (images of the) gods who are the masters of the sanctuary, (as well as) the heavenly anchorites (*Vidyādhara*) the decoration should be completed.

98-101. In the smallest, the intermediate, and the largest types of temples of Siva, Vishnu, Jina, and others, the images of Dakshiṇā, Nāra-siṁha, and all other gods mentioned above should be made.

102-105. All these images, namely, of Dakshiṇā and oth ers, should be made at the bottom of the buildings of one and more storeys, and (also) at the neck because of its prominence the wise (architect) should discreetly make the images of all gods.

Thus in the *Mānasāra*, the science of architecture, the twenty-second chapter, entitled:

The description of the four-storeyed buildings.

CHAPTER XXIII

THE FIVE-STOREYED BUILDINGS

1. The setting up and the general features of the five-storeyed buildings will be described now.

2-3. Having made as mentioned above the division in the breadth and the height of the smallest, the intermediate and the largest types, the wise (architect) should construct the five-storeyed buildings.

4-12. Of the twenty-four parts of the height, the plinth (*masūraka*) should be one part and a half; the height of the pillar should be four parts, and that of the entablature one part and a half; the pillar should be two and one fourth parts, and the entablature (*mañcha*) above one part; above that the pillar should be two parts, and the height of the entablature one part; the pillar should be one and three-fourths parts, and the height of the entablature one part; half of that should be the height of the platform (*vedikā*), and the height of the neck (*gala*) one part; the head (*mastaka*) should be two parts and a half, and remainder the height of the finial (*śikhā*); it should be furnished with the side-tower (*karṇa-harmya*), etc., and be decorated with all kinds of ornaments up to the height of the neck: this is called the *Airāvata*.

13-15. The very same, with projections in the four directions extending by half the width and the three storeys being erected suitably

on the four sides, is known to be the *Bhūta-kānta* in the five-storeyed buildings.

16–18. As before the portico (*bhadra*) should be made of three-fourths of a part in width, the storeys should be constructed (one above the other) in the four directions, and it should be decorated with the side-tower (*karṇaharmya*): this is known as the *Visva-kānta* in the five-storyed buildings.

19–24. Optionally, the dwelling houses should be constructed in the four quarters in proportion to the width; thereat from end to end between any two of the three main edifices the corridor (*antarāla*) should be made; the staircases should be made at the side all around; and the door should be fittingly opened; (of these three edifices) the central one should be five-storeyed, and one four-storeyed and one two-storeyed (at its two-sides); the five storeyed one should be built as before: this is called the *Mūrti-kānta.*

25–26. The very same, with the two side edifices being built in the intermediate quarters and the main edifice being built as before is called the *Gṛiha-kānta.*

27–29. Sixteen auxiliary buildings should be built round the outside of this; the number of houses on its four sides should be like those of the *Gṛiha-kānta* and other edifices; (and) when there are twenty-five pedestals it is called the *Yama-kānta.*

30–32. The same with twenty-four buildings around the outside (and) the number of houses on the four sides being same as those of the *Griha-kānta* and other edifices, and being five-stroreyed it is called the *Mahā-kānta.*

33–34. The same, with the number of buildings on the four sides being same as those of the *Gṛiha-kānta* and other edifices, and being furnished with five storeys, it is called the *Kalyāṇa.*

35–41. The width of the corridor (*antarāla*) should be equal to, or half, or three-fourths of, or (preferably) equal to (that of) the edifice (*prāsāda*); or (this will be described) in the cubit measurement: the width of the corridor (*antarāla*) should begin from three or four cubits and end at nine or ten, the increment being by two cubits; in the corridor should be suitably built something like the pavilion (*maṇḍapa*); or the front and the two sides of the main edifice should be furnished with three pinnacles (*kūṭa*); it should be (partly) one-storeyed and (partly) of more than one storey: this is called the *Yajña-kānta*.

42–43. When there are thirty (auxiliary) buildings of one, two or three storeys, (and the main edifice is) of five storeys, and it is decorated with all ornaments, it is called the *Brahma* (*-kānta*).

44. These are said to be the eight kinds, the remaining (details) being carried out as before.

45. They should be furnished with spherical roofs (*śikhara*), etc., and be of uniform shape.

46. The temples of all gods should be built in the same way.

47–50. All such buildings should be furnished in the four quarters with pinnacles (*kūṭa*), attic pavilions (*śālā*), vestibules (*nāsikā*), and windows (*pañjara*), etc.; and then (again) all those buildings mentioned above should be suitably furnished with various theatre-like courtyards (*raṅga*), and verandahs and balconies (*alinda*).

Thus in the *Mānasāra*, the science of architecture, the twenty-third chapter, entitled:

The description of the five-storeyed buildings.

CHAPTER XXIV

THE SIX-STOREYED BUILDINGS

1. The setting up and the detailed features of the six-storeyed buildings will be described now.

2. The breadth, the height, and their division should be made as before.

3-12. Its height should be divided into fifty-seven parts; (of these) the plinth should be four and a half parts, and the height of the pillar seven parts; half of that should be the height of the entablature, and the pillar above six parts; above that the entablature (*mañcha*) should be three parts, and the pillar above five parts; half of that should be the height of the entablature, and the pillar four and a half parts; the entablature (thereof) should be two parts, and the pillar four and a half parts; the entablature should be one part and a half, and the platform (*vedikā*) should be constructed of one part; the height of the neck (*grīva*) should be four parts, and that of the spherical roof (*śikhara*) four parts; the remainder should be the height of the small dome (*stūpi*) which should be fittingly attached; and (the whole) should be furnished with all kinds of ornaments: this is the *Padma-kānta*.

13-14. The same with this difference that the base in each storey should be made of one part (only), (and) the whole should be decorated with the side-tower (*karṇa-harmya*), etc.: this is called the *Kāntāra*.

15. Optionally, if there be made a reservoir of water on any side, it is known as the *Sundara*.

16. Or if there be a pedestal, it is known as the *Upa-kānta*.

17-18. Or if the platform (*vedi*) and the entablature (*mañcha*) be constructed in all the upper storeys, and if the corridor (*antara*) be made of stone (-slabs), it is called the *Kamalāksha*.

19. If the third storey be furnished with an entablature (*mañcha*), it is called the *Ratna-kānta*.

20. If the fourth storey be furnished with an entablature, it is called the *Vipulāṅka*.

21. If the fifth storey be furnished with an entablature (*mañcha*), it is known as the *Jyotish-kānta*.

22. The same being furnished with a portico (*bhadra*) is called the *Saroruha* (*lit.* lotus).

23. The same with the foreneck extending to the finial should be the *Vipulākṛitika*.

24. The same with the eight-cornered spherical roof (*śikhara*) is known as the *Svasti-kānta*.

25. The same (roof) being square, it is called the *Nandyāvarta*

26. The same with an octagonal neck (*gala*) is known as the *Ikshukānta*.

27. The six-storyed buildings are thus called by the thirteen names.

28. The width of the middle chamber should be three, four, five, six, or seven parts.

29. (The width of) the chain (*hārā*) together with the window (*pañjara*) should be one; two, three, four, or five parts.

30. The width of the side-pinnacle (*karṇa-kūṭa*) should be one or two parts.

31. Every one of the storeys should be decorated with the side-pinnacle (*karṇa-kūṭa*). the compartment (*koshṭha*), and the chain (*hārā*) etc.

32. Of one, two or three parts should be the portico (*bhadraka*) in the middle of the chain (*hārā*).

33. Of one, two, three, four, or five parts should be the portico (*bhadraka*) in the middle of the compartment (*koshṭha*).

34. The portico (*bhadraka*) in the middle of the width of the side-pinnacle (*karṇa-kūṭa*) should be one-third (of the latter).

35. It (the edifice) should be ornamented with the portico-hall (*bhadra-śālā*), the great vestibule (*mahā-nāsi*), the half-hall (*ardha-śala*), etc.

36. All the upper storeys should be furnished with all the feaures of the first storey (i.e., ground floor).

37. From the second to the sixth storey it should be ornamented fittingly.

38. It should be furnished with various bases, and ornamented with various pillars.

39. It should be decorated with various windows (*pañjara*), pavilions (*śālā*), and vestibules (*nāsikā*).

40. From the entablature to the corona (*kapota*) it should be decorated with small vestibules (*kshudra-nāsi*).

41-42. The spherical roof (*śikhara*) should be furnished with middle-sized vestibules (*madhya-nāsi*) and the small vestibules of the corona (pigeon); and should be furnished with vestibules (*nāsi*) connected with the beam (*vaṁśa*), and be decorated with all ornaments.

43. The neck (*grīva*) should be tastefully decorated with small pillars.

44. It should be furnished with the side-tower (*karṇa-harmya*), etc., at the top of the storeys.

45-46. The verandah (*alinda*) should be constructed of one or two parts around the bottom; and in the upper storeys the balcony should be made of one part.

47. The rest should be made as before: the six-storeyed buildings are thus described.

48-49. The best architect should make in all the compartments of such edifices, the images of all gods mentioned above, such as, Brahmā, Vishṇu, Śiva, together with those of Nārada and others.

Thus in the *Mānasāra*, the science of architecture, the twenty-fourth chapter, entitled:

The description of the six-storeyed buildings.

CHAPTER XXV

THE SEVEN-STOREYED BUILDINGS

1. The setting up and the general features of the seven-storeyed buildings will be described now.

2. The breadth, the height and their division should be made as before.

3-24. From the plinth (*janman*) to the dome (*stūpi*) the height being divided into thirty-five equal parts, the height of the plinth should be two parts; twice that (i.e., four parts) should be the height of the pillar, and the height of the entablature one part; above that the pillar should be four and a half parts, and half of that the height of the entablature; the height of the pillar should be three parts, and the entablature (*mañchaka*) above one part and a half; the pillar above should be two parts and a half, and the height of the entablature one part and a quarter; the height of the platform (*vedikā*) should be half a part, and the height of the neck one part and a quarter; the pillar above should be three parts, and the entablature (*mañcha*) above one part; the height of the pillar should be two parts minus one-fourth, and the height of the entablature one part; the height of the pillar should be one part and a half, and the entablature (*mañcha*) above half of that; the height of the platform (*vedikā*) should be half a part, and the height of the neck (*gala*) one part and a quarter; twice that (i.e., two parts

and a half) should be the height of the head (*śiras*), and the remainder should be the height of the finial (*śikhā*). The width should be divided into an (equal) number of parts as before; the measurement by parts of the attic pavilion (*kūṭa-śālā*), etc., in the small, the intermediate, and the largest types (is given below): the width of the side-pinnacle (*karṇa-kūṭa*) should be one, or two parts; the width of the pavilion (*śālā*) in the middle should be six, seven, eight, or nine parts; the remaining parts should be for the corridor (*antarāla*) (which is built) between the two attic pavilions; the width of the small pavilion (*kshudra-śālā*) inside that should be one or two parts; at their two sides, the remaining parts should be given to the two chains (*hārā*); above that the surrounding balcony (*alindaka*) should be made of one part; every one of the storeys should be furnished with (at least two) pillars, and be decorated with the side-tower (*karṇa-harmya*), etc.; it should be decorated with all ornaments: this is called the *puṇḍarīka* (lotus).

25. With a portico-hall (*bhadra-śālā*) in the middle, it is known as the *śrī-kānta*.

26. When it is furnished with an upper pavilion (*ūrdhva-śālā*), it is called the *śrībhoga*.

27. If there be a pinnacle (*kuṭa*) at the side of the pavilion (*śālā*), it is called the *Dhāraṇa*.

2 . The same being furnished with a neck pinnacle (*gala-kūṭa*) is called the *Pañjara*.

29. If there be the portico-hall (*bhadra-koshṭha* in each storey, it is called the *Āśramāgāra*.

30. If it be furnished with two entablatures (*mañcha*), it is called the *Harmya-kānta*.

31. If it be furnished with a top-pinnacle (*ūrdhva-kūṭa*), it is called the *Hima-kānta*.

32. These are said to be the eight kinds with regard to the seven-storeyed buildings.

33. In each storey, there should be compartments (*koshṭha*), side pinnacles (*karṇa-kūṭa*), and balconies (*alinda*), etc.

34. All the small pavilions (*kshudra-śālā*) should be ornamented with platforms (*vedikā*).

35. They should be furnished with arches and vestibules (*nāsikā*) and be decorated with small vestibules (*kshudra-nāsi*).

36. They should (also) be furnished with various bases, and ornamented with various pillars.

37. They should be furnished with various entablatures and ornamented with networks (*jālaka*).

38. They should have one, three, five, or seven component parts[1]

39. The rest should be made as before; thus are described the seven-storeyed buildings.

40. The images of gods should be constructed as before in each storey of the edifice.

Thus in the *Mānasāra*, the science of architecture, the twenty-fifth chapter, entitled:

The description of the seven-storeyed buildings.

1 This may apply to the several courts into which the whole compound is divided, see chapter XXXI.

CHAPTER XXVI

THE EIGH-STOREYED BUILDINGS

1. The setting up and the general features of the eight-storeyed buildings will be described now.

2-3. The attic (*kuṭya*) and other members should be measured as before in proportion to the measurement of the height; and the attic pavilion (*kūṭa-śālā*), etc., should be measured in proportional parts as before.

4-6. The names of the eight kinds (of eight-storeyed building) are (as follows): *Bhū-kānta, Bhūpa-kānta, Svarga-kānta, Mahā-kānta, Jana-kānta Tapas-kānta, Satya-kānta,* and *Deva-kānta.*

7-10. The width of the edifice should be divided into seventeen equal parts, (of these) the side-pinnacle (*karṇa-kūṭa*) should be one part, and the corridor between the chains (*hārā*) should be one part; the antechamber (*anu-śālā*) should be two parts, and the corridor (*antarā-laka*) thereof half of that; and the large hall (*mahā-śālā*) should be made of seven parts in these buildings.

11. At the four corners of these should be four pinnacles (*kūṭa*), two compartments (*koshṭha*), and eight chains (*hārā*) and other members

12. There are stated to be eight small halls *kshudra-śālā*), and four compartment halls (*koshṭha-śālā*.)

13. The portico-hall (*bhadra-śālā*) in the middle should be one-third of the central-hall.

14-15. At their two sides should be made the halls (*śālā*) of two parts and a half each; all the storeys from the ground floor upwards should be similarly furnished (with halls).

16-20. As an alternative, of the eighteen parts (of the width) eth pinnacle and the chain should be as before; the great hall (*mahā-śālā*) should be six parts, and the four (other) halls, (at the corner) three parts each; the portico-hall (*bhadra-śālā*) in the middle should be one-fourth of the central hall; the antechamber hall in the interior and the portico (proper) should be made of one part each; the rest should be made as before: this is called the *Bhū-kānta*.

21-27. The width of the eighth-storey being divided into nineteen parts, the width of the pinnacles (*kūṭa*) should be one part each, and the great hall (*mahā-śālā*) five parts; the antechamber (*anuśālā*) should be three parts, and the corridor between the chains (*hārāntara*) two parts, the width of the portico-hall (*bhadra-śālā*) should be three-fourths of the great hall (*mahā-śālā*); the rest should be made as before, then there may be an alternative: the central hall (*madhya-śālā*) should be made of five parts, and the portico at its middle should be fittingly made; the rest should be constructed as before: this is known as the *Bhūpa-kānta*.

28. In this way the smallest[1] type of eight-storeyed buildings should be constructed.

29-33. The width of the eight-storeyed building being divided into twenty-one parts, the great hall in the centre should be constructed of seven parts; in the middle of that the central hall (*madhya-śālā*) together with its portico (*bhadraka*) should be made of five parts; beyond that of three parts should be made the portico-hall (*bhadra-śālā*); the rest should be made as before: this is known as the *Svarga-kānta*.

34. In this way the intermediate type of eight-storeyed buildings should be constructed.

35-38. The width of the largest type of the eight-storeyed buildings should be divided into twenty-two parts; (of these) the width of the great hall (*mahā-śālā*) in the centre of it should be eight parts; in the middle of that the compartment hall (*koshṭha-śālā*) with its

[1] It may, otherwise, imply the closed quadrangle surrounded by buildings on all four sides, or an enclosed courtyard (see the writer's *Dictionary*, page 103.)

portico (*bhadraka*) should be four parts: thus is described the *Mahā-kānta*.

38-39. The same with a portico-hall (*bhadra-śālā*) in the centre of it made of two parts is known as the *Jana-kānta*.

40-41. If on the two sides of the main hall (*śālā*) there be the frontal antechamber (*netra-śālā*) with porticoes (*bhadraka*), it is called the *Tapas-kānta*, the remaining members being constructed as before.

42-44. The same with a pinnacle (*kūṭa*) over the central hall (*madhya-śālā*) and especially on its side, and with the chain (*hārā*) equal in breadth to the pinnacle (*kūṭa*), is called the *Satya-kānta*, the rest being made as before.

45-46. The same with the antechamber (*anuśālā*) and the central hall together with the portico (*bhadraka*) is called the *Deva-kānta*, the upper storeys being constructed as before.

47. This is the largest type of eight-storeyed buildings; this is decorated with all ornaments.

48. The measurement of its different members from the plinth to the small dome is stated here.

49-60. The height of the edifice being divided into forty-one parts, the plinth should be eight parts and the pillar four parts; half of that should be the height of the entablature (*lit.* roof *valabhī*), and the pillar should be three and a half parts; (its) entablature (*mañcha*) above should be one and three-fourths parts, the pillar above should be three parts, half of that should be its entablature (*mañcha*) above; the height of the pillar should be two and three-fourths parts, the height of the entablature should be one and one-fourth part; the length of the pillar should be two and a half parts, half of that the height of the entablature; the length of the pillar should be one part and a half, and the entablature one part; the pillar should be two parts and a quarter, and the entablature (*mañcha*) above three-fourths of a part; the height of the pillar should be two parts, and the height of the entablature one part; and above that should be three parts; of these three parts one should be given to the platform (*vedi*) and two to the height of the neck (*gala*);

the head (*śiras*) above should be one and one-fourth parts, and the remainder the height of the finial (*śikhā*).

61-72. The same height is divided by some into seven parts more: the bases at the foot of the pillars one above the other should be made of proportional parts; the side-towers (*karṇa-harmya*) should be made of one part surrounding the storeys; the interspace between the storeys should be furnished with entablatures decorated with all kinds of ornaments; at its ends a surrounding balcony (*alinda*) should be made of one part, it (the verandah or balcony) should (also) be made at the region of the base (*mūla*) and at the region of the upper storeys; it should be decorated with frontal halls (*netra-śālā*), half-halls (*ardhaśālā*), and the portico-halls (*bhadra-śālā*), etc.; it should (also) be decorated with arches, niches (nest-halls) (*niḍa-śālā*), and the vestibules (*nāsikā*), etc.; it should be furnished with the chambers (*koshṭha-śālā*), central halls, and upper halls; it should be decorated with vestibules (*nāsikā*), windows (*pañjara*), and portico-vestibules; the regions of the small halls (*kshudra-śālā*) should be decorated with all ornaments; the vestibules and windows (*pañjara*) should be furnished between the limbs of the side-pinnacle.

73. All the component parts (including) the small vestibules should be ornamented with entablatures and other structures.

74. They should be furnished with various bases, and ornamented with various pillars.

75. They should be furnished with the finials (distinguished) in the Nāgara, Drāviḍa, and Vesara styles[1].

76. They should be made as before and be ornamented with all kinds of ornaments.

Thus in the *Mānasāra*, the science of architecture, the twenty-sixth chapter, entitled:

The description of the eight-storeyd buildings.

[1]The *Nāgara* is distinguished by its quadrangular shape, the *Drāviḍa* by its octagonal or hexagonal shape, and the *vesara* by its round shape (see chapter XLIII, 124-125; Suprabhedāgama, XXXI, 37-39, and the writer's *Dictionary*, pages 299-302.)

CHAPTER XXVII

THE NINE-STOREYED BUILDINGS

1. The setting up and the general features of the nine-storeyed buildings will be described now.

2. The width and the height, and their division, etc., should be as before.

3-4. They (are named) in order: *Saura*, *Raurava*, *Chaṇḍita*, *Bhūshaṇa*, *Vivṛita*, *Suprati-kānta*, and *Viśva-kānta*.

5-9. Of the twenty parts of the breadth the pinnacle (*kūṭa*) should be one part; the central hall (*madhya-śālā*) should be six parts, and the corridor (*antarālaka*) equal to that; inside that (central hall) it should be decorated with small halls (*kshudra-śālā*) of two parts each. At their sides should be constructed chains (*hārā*) of two parts each; the rest should be constructed as before: this is called the *Saura-kānta*.

10. The great hall (*mahā-śālā*) being made of four parts together with the portico (*bhadra*) in the middle, it is called the *Raurava*.

11-12. The same (with this difference) that the width of the portico-halls should be four parts, and that the portico itself (*bhadra*) should be made of two parts, it is called the *Chaṇḍita*.

13-14. The same with the portico-hall (*bhadra-koshthaka*) made of two parts in the middle of the central hall (*madhya-śāla*), and it being decorated with all ornaments, is called the *Bhūshaṇa.*

15. These are said to be the four kinds in the smallest type of the nine-storeyed buildings.

16-18. Otherwise, in the smallest type the central hall (*madhya-koshṭha*) may be three parts; or the width of the central portico (*madhya-bhadra*) may be four parts; or it may be five parts, but the names are said to remain as before.

19-22. The breadth being divided into twenty-four parts, the pinnacles (*kūṭa*) should be as before; the great hall (*mahā-śālā*) and the antechamber (*anu-śālā*) should be eight and three parts respectively; in the middle of the length of the great hall (*mahā-śālā*) the portico should be made of four parts; and it being decorated with all ornaments, is called the *Vivṛita.*

23-26. Of the twenty-five parts (of the breadth), the central portico (*madhya-bhadra*) should be five parts; at its sides there should be two side-pinnacles (*karṇa-kūṭa*) made of one part each in case of the human dwellings; it should be furnished with the antechamber (*anuśālā*) made of one-third of the central portico (*madhya-bhadra*); (and) the rest being made as before, it is named the *Suprati-kānta.*

27-33. Of the twenty-six parts (of the breadth), the central hall (*madhyama*) should be made of four parts in the intermediate type of the edifice and be furnished with all ornaments; but in case of the largest type of nine-storeyed buildings, it (the breadth) should be divided into twenty-seven parts; (of these) at the sides of the central pavilion the chain and the side-pavilion together with the window should be made of two and one part (respectively); the tower-halls should be seven parts (each), and the central portico (*madhya-bhadra*) five parts; the portico-hall (*bhadra-koshṭha*) should be three parts, and the rest should be made as before; this is said to be the largest type of nine-storyed buildings and is called the *Viśva-kānta.*

34. At their upper part, I say at the top, the reservoir of water should be made of two parts.

35-39. The relative measurement of (the members) by the height from the plinth to the dome is described here: the height of the edifice above the eighth storey should be divided into ten parts; (of which) the plinth should be two and a half parts, and twice that the height of the pillar; half of that should be the height of the entablature (roof), and the rest should be as has been said in the case of the eight-storeyed buildings; thus the height of the ninth storey should be decorated with all ornaments.

40. They (the nine-storeyed buildings) should be furnished with various bases, and ornamented with various pillars.

41. They should be furnished with side-towers (*karṇa-harmya*), etc., and the doors should be furnished with the entablature.

42. They should be furnished with the porticos, pinnacles, halls, vestibules, and windows.

43. The chains, etc., as well as the minor small vestibules should be constructed symmetrically.

44. They should be decorated with arches (*toraṇa*), niches (*nīḍa*), screens (*jālaka*) and all other ornaments.

45. The rest should be made as before, and the images of gods should be made in all quarters in order.

46. The wise (architect) should build as said before in each storey of the edifice.

47. Thus are described the nine-storeyed buildings, the rest should be constructed according to one's discretion.

Thus in the *Mānasāra*, the science of architecture, the twenty-seventh chapter, entitled:

The description of the nine-storeyed buildings.

CHAPTER XXVIII

THE TEN-STOREYED BUILDINGS

1. The setting up and the general features of the ten-storeyed buildings will be described now.

2. The width, the height, and the division of the tenth-storey should be as before.

3-4. *Bhū-kānta*, *Chandra-kānta*, *Bhavana* (*-kānta*), *Antariksha* (*-kānta*), *Megha-kānta*, and *Abja-kānta*: these are said to be the six kinds (of the ten-storeyed edifices).

5. The width of the edifices should be made varying with these names.

6-8. In the case of the *Bhū-kānta* and the *Chandra-kānta* types of ten-storeyed buildings, the pinnacles (*kūṭa*) and the halls (*śālā*), etc., should be the same as those prescribed for the nine-storeyed buildings: the smallest and the intermediate types of ten-storeyed buildings should thus be fittingly constructed.

9-13. The width of the aforesaid edifice being divided into twenty-eight parts, the width of the pinnacles (*kūṭa*) should be one part each, and the structure resembling the hall (*śālā*) in the middle twelve parts; the antechamber (*anuśālā*) should be three parts, and the chains (*hārā*) at it sides two parts each; the portico in the central region of the great hall (*mahāśālā*) should be made of six parts: this

is the *Bhavana-kānta* : this should be constructed in the largest type of ten-storeyed buildings.

14-15. Of the same excellent width, (twenty-eight parts) the chain (*hārā*) and the antechamber (*anu-śālā*) should be made of two parts each ; and the rest being as before it is called the *Antariksha-kānta*.

16-17. Of the same (twenty-eight parts) for the beautiful chains (*hārā*) at the side of the attic pavilion (*śālā*) should be left one part or two parts and the great hall (*mahā-śālā*) should be made of six parts : this is named the *Megha-kānta*.

18. The same with the hall-portico made of four parts in its centre is called the *Abja-kānta*.

19. The rest in the width of the ten-storeyed edifice should be made as stated before.

20-33. We shall now describe the relative measurement (of the members) in the height from the plinth to the dome : of the sixty-three parts of the height, the height of the plinth (*masūraka*) should be three parts ; twice that should be the height of the pillar, and half of the latter the entablature (=roof) in the upper region ; above that the height of the pillar should be five parts, and the height of the entablature (=roof) half of that ; the pillar should be four and a half parts, and the entablature (*mañcha*) above should be made of two parts ; the height of the pillar should be four parts, and that of the entablature (=roof) half of the former; two parts more than the latter (i.e., four parts) should be the pillar above, and the height of the entablature (=roof) one part and a half ; above that the pillar should be three parts, and half of that the height of the entablature (*mañcha*) above ; the height of the pillar should be two parts and a half, and the height of the entablature (=roof) one and one-fourth parts ; the (next) pillar also should be two parts, and the height of the entablature (=roof) one part ; twice that should be the pillar above, and half of the latter the height of the entablature (*mañcha*) above ; the pillar

above should be two parts, and the entablature (*mañcha*) above one part; equal to that should be the height of the platform (*vedikā*), and the height of the neck (*gala*) one part; the height of the spherical roof (*śikhara*) should be four parts, and the remainder is said to be the height of the finial (*śikhā*).

34. At the top of all the upper storeys, it (the edifice) should be furnished with the side tower (*karṇa-harmya*), etc.

35. At the bottom the surrounding verandah should be of one or two parts.

36-37. The (combined) base and the pedestal, or the great platform (*mahāvedi*), etc., should be built at the top of the upper storeys, and be decorated with all ornaments.

38. All the members should be tastefully decorated with various ornaments as aforesaid.

39. Therein should be constructed the windows, domes, pillars bases, entablatures, roofs, arches, and niches.

40. In this place[1] in the ten-storeyed edifice the paintings (i.e., images of gods) are rarely made, and still more scarcely the small vestibules.

Thus in the *Mānasāra*, the science of architecture, the twenty-eighth chapter, entitled:

The description of the ten-storeyed buildings.

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[1] It may imply the place or the occasion of the writing by the author, which, however, is not known; but in chapter XXX, twelve provinces are mentioned in connection with different types of twelve-storeyed edifices.

CHAPTER XXIX

THE ELEVEN-STOREYED BUILDINGS

1. The setting up and the general features of the eleven-storeyed buildings will be described now.

2-3. *Śambhu-(kānta)*, *Īśa-kānta*, *Chakra-kānta*, *Yama-kānta*, *Vajra-kānta*, and *Arka-kānta* : these are in order the names of the edifices.

4-8. The width of the eleventh-storey of the edifice being divided into nineteen parts, the pinnacles (*kūṭa*) should be built of two parts each, and the great hall (*mahāśālā*) of nine parts ; the ante-chambers (*anu-śālā*) should be four parts each, and the chains (*hārā*) two parts each ; the portico-hall (*bhadra-śālā*) in the centre of the great hall (*mahāśālā*) should be five parts ; and it should be decorated with all kinds of ornaments : this is called the *śambhu-kānta*.

9-10. The same should be furnished with the portico made of two parts in the middle of the vestibule : thus is described the *Īśa-kānta* ; this is called the first of the smallest type of (eleven-storeyed) edifices.

11-15. Of the intermediate type of eleven-storeyed buildings the width being divided into thirty parts, the great hall (*mahāśālā*) should be ten parts, and the central portico (*madhya-bhadra*) five parts ; at its sides should be the pinnacles together with the chain (*hārā*) and windows (*pañjara*) made of one part each ; of the same parts (of the

width), the portico-hall (*bhadra-śālā*) in the centre should be four parts; and the rest should be built as before: this is known as the *Chakra-kānta*.

16–18. The same (with this difference) that the pinnacle (*kūṭa*) should be one part, and the antechamber (*anuśālā*) five parts; that a three pillared portico should be made of one-third of that; and it should be decorated with all ornaments: this is called the *Yama-kānta*.

19–23. The width of the largest of the (eleven-storeyed) edifices being divided into twenty-one parts, the pinnacles (*kūṭa*) should be made of two parts each, and the chains (*hārā*) also of two parts each; between the two chains (*hārā*) the ante-chamber (*anuśālā*) should be five parts; in the centre of that the experienced (architect) should make the portico (*bhadra*) of one-third of that; the great hall (*mahāśālā*) should be made of nine parts, and the portico (*bhadra*) in the centre of five parts; in the centre of that the portico hall (*bhadra-śālā*) should be made of four parts: this should be the *Vajra-kānta*.

23–34. The *Arka-kānta* is described here: the same (as the former with this difference that) at the end and the side of the hall (*śālā*) should be one part for beauty; in the interspace of those the two small chains (*kshudra-hārā*) should be equal to that; the width of the pinnacle (*kūṭa*) should be as before, and the remainder should be for the chain together with the window (*pañjara*); in the middle of that the width of the small hall (*kshudra-śālā*) should be one-third of that; at its sides the chains (*hārā*) should be made of three parts each together with the portico (*bhadraka*) inside; the central portico (*madhya-bhadra*) should be made of one-third of the small hall; the small chains (*kshudra-hārā*) of all (the types) should be furnished with the vestibules (*nāsikā*) and the windows (*pañjara*); the great vestibules (*maha-nāsi*) should be in the middle (of all types) and the frontal hall (*netraśālā*) at the two sides; they should be decorated with all ornaments: these are known as the six kinds.

35. The remaining members of all (the types) should be fittingly made in their proper places.

36. These are (the members of) the relative measurement of the breadth, those of the height are described here.

37. From the plinth to the dome is known to the assemblage of the aforesaid members.

38-41. The height above the tenth storey should be divided into eleven parts; out of these, the height of the plinth (*masūraka*) is desired to be four parts and a half; the height of the pillar should be seven parts, and the height of the entablature (roof) half of that; the rest should be as said before; this is the comparative measurement (of the members) in the height of the eleven-storeyed buildings.

42. All the upper storeys should be furnished with the side towers (*karṅa-harmya*), etc.

43. The surrounding balcony is desired to be of one or two parts.

44-45. They should be furnished with various bases, decorated with various pillars, and ornamented, as said before, with halls (*śālā*), pinnacles (*kūṭi*) and chains (*hārā*).

46. The tower-hall (*kūṭa-śālā*) should be built between the chains (*hārā*), and the images of gods should be made, as said before, at the region of the neck (*grīva*).

47. The images of the presiding deities of the eight quarters together with their vehicles should be depicted in the antechamber (*anu-śālā*).

48-49. The images of Yakshas, Vidyādharas, and others, of the Garuḍa, etc., and also of Gaṇeśa and the Gaṇas should be carved in all edifices.

Thus, in the *Mānasāra*, the science of architecture, the twenty-ninth chapter, entitled:

The description of the eleven-storeyed buildings.

CHAPTER XXX

THE TWELVE-STOREYED BUILDINGS

1. The setting up and the general features of the twelve (lit. other)-storeyed buildings will be described now.

2. The width and the height should be as prescribed in (the chapter in) regard to the dimensions of storeys.

3. Of the smallest of the small, the intermediate, and the largest types, whichever is considered beautiful should be selected.

4. In the setting up of the edifice the assemblage of divisions (for the members, should be as stated before.

5–6. The *Pāñchāla*, *Drāviḍā*, *Madhya-kānta*, *Kāliṅga*, *Virāṭa* *Kerala*, *Vaṁśaka*, *Māgadha*, *Janaka*, and *Gurjaka*: these are known as the ten *kānta* (i.e., classes of twelve-storeyed buildings).

7–10. The width of the twelfth storey should be divided into twenty-eight parts; (of these) the great hall (*mahā-śālā*) should be ten parts, and the rest should be made as before: the *Pāñchāla* and the *Drāviḍa*, (thus described), are the smallest types in the twelve-storeyed buildings.

11–14. The width of the intermediate type being divided into thirty-three parts, the width of the pinnacle (*kūṭa*) should be three parts,

and the central portico (*madhya-bhadra*) one part; the great hall (*mahā-śālā*) should be nine parts, and the rest should be made as before: the *Madhya-kānta* is thus described.

14-16. (The same with this difference that) its pinnacle (*kūṭa*) should be made of two parts; the antechamber (*anu-śālā*) should be six parts, and its (remaining) members should be as before; (and) it should be decorated with various ornaments: this is the *Kāliṅga-kānta*.

17-27. The width of the edifice being divided into thirty-four parts, the great hall (*mahā-śālā*) should be eight parts, and the halls (*śālā*) at its sides one part each; the minor window-hall (*anupañjara-śālā*) should be two parts, and half of that the corridor (*antarālaka*), the antechamber (*anu-śāla*) should be three parts, and the corridor (*antarālaka*) (thereof) one part; the window hall (*pañjara-śālā*) should be two parts, and the chain (*hārā*) at the side one part; the pinnacles (*kūṭa*) should be two parts each, and all of them should be tastefully furnished with the portico (*bhadraka*); the central portico (*madhya-bhadra*) should be made one fourth part of the great hall (*mahā-śāla*); in all the storeys of the edifice there should be sixteen hall-windows (*śālā-pañjara*); in the interior of it there should be eight small halls (*kshudra-śālā*) each furnished with two chains (*hārā*); in each storey there should be a great hall (*mahā-śālā*) and four pinnacles (*kūṭa*) at the four sides (of each storey); and the remaining members should be as before: this is the *Virāṭa-kānta.*

28-30. The same (with this difference) that the width of the small hall (*kshudra-śālā*) should be five parts; that the chain (*hārā*) should be made of one-third of that and be tastefully decorated; and the rest should be made as before: this is the *Kerala-kāntaka.*

31-32. The same (with this difference) that inside the chain (*hāra*) one part should be left for beauty; the rest should be made as before: this is called the *Vaṁśaka-kānta.*

33-34. The same (with this difference) that the portico-hall (*bhadra-śālā*) in the middle of the antechamber (*anuśālā*) should be made of one part; and its side-pinnacle (*karṇa-kūṭa*) should be furnished with the portico: this is the *Māgadha-kānta*

35-36. The same (with this difference) that the central portico (*madhya-bhadra*) should be made of two parts of the great hall: this is said to be the *Jana-kānta*, in the largest type of twelve-storeyed buildings'.

37-41. The height above the eleventh storey should be divided into thirteen parts increased by one; of these parts, the height of the base (*kuṭṭima*) is said to be four parts; the height of the pillar should be eight parts, and half of that the height of the entablature; the finial (*śikhā*) should be half a part, and the remainder of the height should be distributed as before: this is the twelfth storey, its height should be discreetly distributed (to different members).

42. The balcony (*alinda*) should be made around one part, and that should be in all the upper storeys.

43-44. The lower storeys including the ground-floor (lit. one and many storeys) should be made symmetrical to the upper storeys; having but one part (between two storeys for roofing) the storeys should be constructed one above the other.

45. The projection of the central hall (*madhya-śālā*) should be one, two, or preferably three rods (*daṇḍa*).

46. The projection of the small hall (*kshudra-śālā*), etc., should be a half, one, or two rods (*daṇḍa*).

47. The projection of all the porticos (*bhadra*) should be one part, or one and one-half rods (*daṇḍa*).

48-49. Every one of the storeys should be furnished with several pillars, towers, balconies, all the component members, side-towers, etc., corridors and entablatures.

50-53. If the great hall (*mahāśālā*) be without any portico (*bhadra*), it should be furnished with an (extra) hall (i.e., antechamber)'; if the top hall be furnished with one portico it should also have a middle compartment; if the great hall have two porticos, at its top should be built (another) hall; the great hall with portico should be furnished with the portico-hall (also).

The description of the tenth type *Gurjaka*, is missing, see note under the Sanskrit text.

54. The top hall (*ūrdhva-śālā*) should be furnished with the portico (*bhadra*), and be ornamented with the entablature.

55. The great hall (*mahā-śālā*) should have a projection as its member (lit. limb), and the small hall (*kshudra-śālā*) should be furnished with its (own) entrance (*veśana*).

56 The great hall (*mahā-śālā*) should be built in the centre of all those edifices.

57. The small hall (*kshudra-śālā*) should be constructed inside the chains (*hārā*) of the edifices.

58. The corner pinnacle (*karṇa-kūṭa*) should be constructed in the intermediate quarters of the edifice.

59. The chain (*hārā*) and the entrance (*veśana*) of the small hall (*kshudra-śālā*) should be made suitably.

60-61. All the edifices should, as said before, be ornamented with the vestibule-windows, arches, windows, and chains, etc.

62-65. The projection of the edifice should be one, two, three, or preferably two parts (of it) ; or in cubit measurement it (the projection) should be increased from one to many (i.e. three): the projections should discreetly be increased in order by the architects to eleven cubits in storeys from two to twelve.

66-67. The members not mentioned here, should be constructed for all (kinds of) buildings in the same manner as prescribed for one of them.

68-75. They should be furnished with various bases, and be ornamented with various pillars ; with various windows, halls, and arches ; ornamented with various vestibules, towers, and chains (*nāsika*, *kūṭa*, and *hārā*) ; furnished with various entablatures, and decorated with various necks ; and various platforms (*vedikā*) should be constructed and decorated with various ornaments ; furnished with various bridge-ornaments (*pālikā*), domes (*stūpikā*), and lotuses of various shapes ; and constructed with various bridge-ornaments : (thus) all the buildings should be fully decorated by the architects.

76-77. The (images of) particular gods should be made as said before, in their own temples in the main and intermediate quarters of the compartment in each storey of the edifice.

78-83. The images of Yakshas, Vidyādharas, and others, of Gaṇas Bhūtas, Rākshas, and others, of Kārtikeya, who had from his birth seven mothers consisting of Rohiṇī and other ladies, and of the goddesses of Viśvakarmā and others, of Agastya and others, and of Nārada and others who were the chanters of the Vedas, and of the Salokya and other (classes of) devotees with their characteristic features stated before, of the innumerable gods represented by thirty-three beginning with those of Brahmā and all others should be made in all the regions, (namely), the base of the edifice, its (different) storeys and at the top, all over.

84. All those members, the measurement of which is not particularly mentioned, should be discreetly constructed.

85-86. The particulars of the staircases for ascending and descending in all kinds of edifices of gods (i.e. temples) and of human beings (i e. dwellings) (will now be described).

87-89. The best architect should construct (staircases) for all kinds of buildings, (namely), the edifices, the pavilions (*maṇḍapa*) enclosures (*prākāra*), gateways (*gopura*), and similarly for hills, tanks, wells, lakes, towns, and villages.

90. The staircases are said to be of two kinds, stationary and movable.

91. The movable staircases are recommended to be made of stone, brick, or wood.

92. The stationary staircases comprising small steps are said to be made of all (such materials).

93-94. All kinds of front porticos (*mukha-bhadra*) should be furnished with staircases at their sides; otherwise, the front staircases may be made at the two sides or at the region of the (front) door.

95-96. For ascending the grand staircase should be made in all edifices at the door-portico on the south (or) at its side towards the east direction.

97. But the staircases should be constructed at the left side of the secret door.

98-102. It is not undesirable to show the great god of adoration (in a temple to its front door); the staircases should, therefore, be

constructed at (either of) the sides of the front portico : at the two sides, at the back part (of the temple), and at the sides of the (two) wings in front of it (the temple) : wherever the staircases are built there would be no defect ; (only) the best architect should not construct the front staircases straight in front of the building.

103-104. It is auspicious to construct staircases in front of the door at the other two sides if the door happens not to have three porches (*bhadra*).

105-106. The architect conversant with the science (of architecture) should make the staircases at the two sides and the front of the shedyard (*prapāṅga*), the front pavilion (*pramukha*), and the porch (*bhadra*) : this has been directed by the ancients.

107. The staircases (in temples) of gods are thus described ; they should be constructed as directed (above).

108. The particulars of the staircases in all kinds of human dwellings, I shall describe (below).

109-110. They (staircases) should be attached to the buildings of the ascetics and others, of the twice-born, especially of other castes, as stated for the temples of gods.

111-114. In the buildings of the twice-born and all classes of kings (Kshatriya) the staircases should be constructed beside the porch (*bhadra*), at its sides, or at the front ; (but) the steps should be attached to the left side of the door if it is furnished with the balcony, but if the door has no balcony the steps should be constructed in the front part.

115-116. The staircase (in the buildings) of the Vāiśyas and the Śūdras will now be described : the staircases should be attached fittingly to the porches (*bhadra*), and the door, etc., as the case may be.

117. The gate-houses (*gopura*) should have characteristic staircases at their sides.

118. For easy ascending they (the staircases) should be constructed at any convenient part of the mountain (or hill).

119-123. The tank, well; and lake should be furnished with (surrounding) staircases on all sides ; or, as an alternative (they may

be constructed) at the four quarters, four corners, or at the inter-spaces; otherwise, the staircases at some such convenient places should be made (only) for the front (or porch); in the very same plaçes, at the most convenient part, the main (*kula*) door should be constructed, and in front of it and on the two sides, the staircases should be constructed as directed before.

124. The stationary staircases are thus described; the moving staircases should be placed at any place as one likes.

125-128. The width (of the step) should be of nine kinds beginning from twelve *aṅgulas* (of three-fourths inch each) and ending at one cubit and a half, the increment being three *angulas;* the length of one step should begin from two and a half cubits and end at four and a half cubits, the increment being by six *aṅgulas.*

129-133. The width of the stationary staircase should begin from one cubit and end at three cubits, the increment being by six *añgulas;* and the length of the stationary staircases should be of nine kinds beginning from two cubits and ending at four cubits, (and again), from three cubits to five cubits, the increment being by six *añgulas.*

134-135. The staircases should be constructed along the height from the plinth to the dome (of a building); the measurement of the slope (i.e., width, *lupā*) should be made as said above, and the extent of the steps will be as required.

136-137. In the case of the staircases for hills, the measure of length may conveniently be as much as one desires, (and) the width (of the step) should be made as prescribed before in the case of the stationary steps

138-139. The width of the surrounding staircases for a lake, etc., (in fact) of all the surrounding steps, should be made as stated above.

140-141. The number of steps (*paṭṭikā*) in the temples is said to begin from three and end at one hundred and twenty-three, the increment being by two.

142. The steps (*paṭṭa*) leading to the road from the hills should be made winding upwards and upwards with the aforesaid measures.

143. The staircases in the human dwellings should be made of steps (*paṭṭa*) in pairs.

144-146. The thickness (lit. foot) of the step of the moveable staircase should be three, four, five or six *aṅgulas*, and its width should be equal to its thickness or greater by one-fourth, one-half, or three-fourths, or twice it.

147. The steps (*paṭṭikā*) should be supported by two posts or banisters (*daṇḍa*) and furnished with holes (paintings.)

148-150. The thickness of the steps (*paṭṭikā*) may otherwise be one, two, or three *aṅgulas*, and the breadth of the step (*paṭṭikā*) two, three, four, five, six, seven, eight, nine, or ten *aṅgulas*.

151. This is for the moving staircases, and that for the stationary staircases will now be described.

152-154. The height and depth of the steps (*paṭṭikā*) should begin from five and six *aṅgulas* respectively, and end at twelve and thirteen, the increment being by two in each case; the depth may be one *aṅgula* more and the height one *aṅgula* less.

155-157. The sides of the staircases should be decorated with the trunk of the elephant; the width at the root of the trunk should be measured in the aforesaid *aṅgulas*; the trunk should taper upwards, the top being one-third of the base.

158-159. It should be shaped like the elephant's trunk, and be beautifully furnished with openings (*dvāra*), and should be furnished at the bottom with three, four, or five lion faces.

160. The cross bars (*lit.* supporting slabs) should be attached from top to bottom, the slabs being measured as aforesaid.

161. The top support should have the shape of the bridge (*pālikā*) and the slabs (*paṭṭikā*) should have the shape of the platform (*vedikā*).

162. The staircases with characteristic features should be furnished with all ornaments.

163. By the sides of the staircases for hills there should not be made any side-baluster.

164-167. It would be certainly inauspicious for the master and the builders to make (the staircases) too high (*unmāna*) and ornamented at the wider side of many buildings just as at the entrance, but it would bring prosperity if the measurement be made as aforesaid.

ĀYA AND OTHER FORMULAS OF THE JĀTI BUILDING

168. I shall describe in order the particulars of the *Aya* and other formulas with reference to the *Jāti* class of buildings.

169-171. With reference to breadth, etc., of the aforesaid buildings should be considered the formulas of *Āya* (increase), *Vyaya* (decrease), *Yoni* (source), *Nakshatra* (planet), *Vāra* (day), and *Aṁśa* (part) or *Tithi*; these are known as the set of the six formulas by those conversant with the *Āya* and other formulas.

172-173. The (set of the) six beginning from *Āya* and ending at *Aṁśa* are considered in case of the buildings of the *Śaṁchita* and *Asaṁchita* classes; and the (set of the) six beginning from the *Āya* and ending at *Tithi* (instead of *Aṁśa* are considered in case of the buildings of the *Apasaṁchita* class.

174-175. The *Jāti*, *Chhanda*, *Vikalpa*, and *Abhāsa*: these four classes should be measured in proportion of one, three-fourths, one-half, and one-fourth cubit respectively.

176. The measurement of buildings should be carried out by considering all those peculiarities.

177-178. The length should be multiplied by six in the *Saṁchita* class of buildings, by seven in the *Asṁchita* class of buildings, and by eight in the *Apasaṁchita* class of buildings, and the products (in all cases) should be divided by twelve; the remainders are said to be the *Āya*.

179. (The breadth) being multiplied by seven, eight, or nine, the product should be divided by ten; the remainder would be the *Vyaya*.

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1. These formulas have been once more referred to in connection with the measurement of villages (Chap. IX—63—93, pages 65—67). See also the writer's *Dictionary*, pages 600—610.

180. (The breadth) being multiplied by one, two, or three, the product should be divided by eight; the remainder would be the *Yoni*.

181-182. (The length) being multiplied by six, seven, or eight, the product should be divided by twenty-seven; the remainder would be the *Nakshatra*, which are counted as Aśvinī, (Bharaṇī) and so on.

183-184. (The circumference or height) being multiplied by six, eight, or nine, the product should be divided by seven; the remainder would be the *Vāra*, which consists of (seven) days starting with Sunday.

185 (The circumference) being multiplied by three or four, the product should be divided by nine; the remainder would be the ***Aṁśa***, which are nine in number.

186. (The circumference) being multiplied by nine, the product should be divided by thirty; the remainder would be the *Tithi*.

187-189. The *Āya* consists of a group of twelve, namely, the *Siddhi* (success) etc.; the *Vyaya* consists of a group of ten, namely, the *Sikhara*, etc.; the *Yoni* consists of a group of eight, namely, the *Dhvaja* etc., the *Aṁśaka* consists of a group of nine, namely, the *Taskara* etc.; and the *Tithi* consists of a group of fifteen, namely, the *Prathamā*, etc.; the wise architect should count these in the manner mentioned above.

190. Prosperity would take leave of a building if its measurements be not verified by the whole set of six formulas, namely, the ***Āya***, etc.

191-194. Of the set of the six, namely, the *Āya*, etc.; it is auspicious to make the *Āya* greater and the *Vyaya* less in the temples of the gods, in the palaces of the kings, in the ordinary residential buildings (of the masters), and also in the construction of the village, etc.; the wise (architect) should, therefore, consider this all auspicious (i.e., important) point.

Thus in the *Manāsāra*, the science of architecture the thirtieth chapter, entitled:

The description of the twelve-storeyed buildings.

CHAPTER XXXI

THE COURTS

1-2. The five courts (*prākāra*)[1] of the edifices which are made to make room for offerings, for accommodation of the family members, for beauty, and for defence (lit. safety) will be described now in order.

3. They (i.e. the courts) of the *Jāti* and other classes, (namely, the *Chhanda*, *Vikalpa* and *Ābhāsa*), of edifices should be arranged in conformity with the measurement of the latter.

4. All the *Jāti* and other types of courts should be (specifically) measured in cubit (also).

5. All the (enclosure) walls (of the courts) beginning with the *Jāti* type should be measured from the (outer) part of the (main) edifice.

6-9. The (perpendicular) length (i.e. the height) of the *Jāti* class of edifices being marked (lit. divided) up to the top, namely, the platform (*vedi*) and the other members, (such as), the neck (*griva*), the head (*mūrdhan*), ending at the apex (*śikhānta*), the five walls (of the five courts), namely, the *Jāti*, etc., should be extended (in height) in a line with the neck (*kandhara*, of the main edifice) ; and the five

[1] There are actually seven court referred to in chap. XL (Royal palace). The sixth and seventh court are mentioned in this chapter also (see lines 83, 88.)

The fourth court is technically called *Prākāra* in line 13, etc, but it is indiscriminately used here and elsewhere.

walls beginning with the *Chhanda* type should be measured (extending the height) to (those) members (lit. parts) of the *Chhanda* and other classes (of edifices).

10-14. Along the breadth of the *Jāti* class of edifices the *Sakala* plan (of one plot) [1] should be marked; therefrom should be made the first court (which is) called the *Antar-maṇḍala* (innermost enclosure); the second (court is called) the *Anta-hārā*, the third court is called the *Madhyahārā*; that fourth (court) is called the *Prākara* by me for the first time (lit. in addition); thereafter (should be) the fifth court (which is) called the *Mahā-maryādā* (the extreme boundary).

15. The five courts are thus described by the ancients learned in the science (of architecture).

16-21. Along the width of the first court, the *Pīṭha* plan (of nine plots) may (otherwise) be marked; the *Sthaṇḍila* plan (of forty-nine plots) should be likewise marked for the second court; in the same manner the *Ubhaya-chaṇḍita* plan (of one hundred and sixty-nine plots) should be marked for the third court; the *Susaṁhita* plan (of four hundred and forty-one plots) should be marked along the width of the boundary (wall of the fourth court;) and along the breadth of the extreme boundary (wall) should be marked the plan of *Iśvarakāntaka* (of nine hundred and sixty-one plots)[2]. The wise (architect) should, thus, make in conformity with the main edifice the *Jāti* type of courts.

22-26. In the *Chhanda* and other types the *Pechaka* plan (of four plots) are recommended for the main edifice, the *Mahāpīṭha* plan (of sixteen plots) should be (made) for the first (court), the *Chaṇḍita* plan (of sixty-four plots) for the second, the *Bhadra* plan (of one hundred and ninety-six plots) for the third; thereafter beyond this court should be the *Supratikānta* plan (of four hundred and sixty-four plots)[1] for the fourth (court), and the *Chandra-kānta* plan (of one

[1] See Chapter VII 2, 51—56, pages 33, 35.

[2] See Chapter VII 4, 8, 15—16, 28—29, 45—46, pages 33, 34, 35.

thousand and twenty-four plots) for the fifth: thus should be made the *Chhanda* class (of edifices)[1]; those of the *Vikalpa* class is described here.

27-29. The width of the (five) courts in the *Chhanda* class (of edifices) should be increased from one and a-half cubits by one cubit up to five and a-half cubits: these should be the measures (of the courts) from the first to the fifth in the *Abhāsa* class; thus are described the (measures of the) five courts (of this class).

30-32. The width (from five and a-half cubits) of those five courts should be (respectively) increased by six *aṅgulas* (i.e., a quarter cubit) up to seven cubits less one quarter: these should be the measures (of the courts) from the first to the fifth; thus should be made the (measurement of the five courts of the), *Abhāsa* class; it (the measurement) should be taken (lit. increased) from the foot of the edifice.

33-35. According to some, the measure of the *Chhanda* courts, from the first to the fifth, should be increased from three cubits by three cubits to fifteen cubits; this measurement of the *Chhanda* courts (*śālā*) refers to the smallest type of the *Chhanda* edifice (*vimāna*).

36-39. The *Jāti* courts (*prākāra*) should also be measured in cubit independently; (the width of) the first court (*śālā*) should be three cubits, and each of the five courts should be greater (than the preceding one) by two cubits, and there should be five series of measures for (each of) the smallest, the intermediate, and the largest types: thus shoud be made the *Jāti* courts.

40-41. The five kinds of courts, from the first to the last, in the largest, the intermediate, and the smallest types, should be in measure, as before, half the width of the main building (*prāsāda*).

42-43. From beyond the foot of the main building the court (*śālā*) should extend to the compound wall; it may extend up to the inner end, outer end, or the middle of the wall.

44. The extension (lit. projection), (of the court) from the foot of the main building may proceed from the pedestal or the small pillar.

[1] See Chapter VII.3, 5, 9, 17,18, 30—31, 48—50, pages 33, 34, 35.

45. That wall of the above mentioned measurement may, otherwise, extend to the platform (*vedika*) of the wall.

46-47. The extent of the court should be equal to one-half the circumference (lit. surrounding measure) of the main building; and it being divided into four parts the face (i.e. front) portion should be (gradually) increased by one of these parts.

48. The length should be five times the breadth; and there should be five series of dimensions (for the five courts) up to the last.

49-50. Then, each of the five courts should be given five series of measure for its face (i.e., the front) portion; again each one of the five courts should be given twenty kinds of width for the front (face) portion[1].

51-53. The width of the walls (*kuḍya*) of the court (*śālā*), from the first to the fifth, should be of five kinds each, beginning from six *aṅgulas*, increasing by six *aṅgulas*, and ending at six cubits.[2]

54-55. The width and height should be equal, or (the latter) should be greater by one-fourth; the height of the walls (*kuḍya*) in each of the five courts (*śālā*) should be of five kinds.

56-59. As an alternative, in comparison with the base, the height of the wall (*kuḍya*) is considered here: the twenty-five kinds of height should begin from the height of the base (*kuṭṭima*) and be from the innermost court (*antarmaṇḍala*) to the fifth court (*mahā-maryādā*); and each of the five walls (*kuḍya*) should be given five kinds of height.

60. That height (of the wall) should be measured from the plinth to the end of the crowning fillet (*uttara*) or the entablature (*prastara*).

61. In the region at the end of the wall (*kuḍya*) should be symmetrically made a surrounding pavilion (*mālikā*).[3]

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[1] The application of so many varieties is not elucidated and is rather unusual.

[2] In this way there would be ordinarily twenty-four kinds, not twenty-five.

[3] For full account of *mālikā*, see the writer's *Dictionary*, pp. 504—506.

62. It (the pavilion) should be furnished with the platfrom (*vedikā*), the pedestal, the pillar, and the entablature.

63–64. At the end of the wall should be the porch (*bhadra*) furnished with steps of desirable measure and of odd or even number for the (use of) the family members.

65–66. A parapet (*vapra*) should be raised over the garland-like pavilions (*mālikā*), and its height should be equal to the (height of the) base, or the height may be twice or thrice as much, or it may be of some other desirable proportion.

67. The forepart of the parapet (*vapra*) should have the shape of the club or the umbrella.

68–69. It should be furnished with the three members, the crowning fillet (*uttara*), the fillet (*vājana*), and the entablature (*mushṭi-bandha*); t should be enriched with the assemblage of members beginning with the base, or with a straight wall (*rajju-bhiti*).

70. It should be decorated with the corner tower (*karna-harmya*), etc., on the part above the entablature.

71. It should be constructed with stone, brick, or wood.

72. In conformity with beauty and strength it should be constructed with either one (*śuddha*), two (*miśra*), or three (*saṁkīrṇa*) materials.

73. Its roof (*prachchhādana*, lit. covering) should be fittingly constructed with (a mortar composed of) slaked lime (*sudhā*), brick, molasses (*gula*), and 'vater.

74–75. The measurement of the temples therein (i.e. within the courts) of the attendant deities will now be described. They should be equal to the main building, or three-fourths, or a-half of it.

76. They may be one or two storey high, or have the shape of the main edifice.

77. They may be equal to, larger or smaller (in height) than the main temple.

78. Four doors should be opened at their four sides, and the smaller doors at the interspace.

79. The (entrance) door should be constructed in the middle (of the length and breadth) in case of the temples and the palaces (of the universal monarchs).

80. Thus is described the large doors; the smaller doors should be opened as stated before.

81-82. In the buildings of the Brahmans and other men the main door should not be opened at the middle; the main (lit. great) door (in such buildings) should be constructed at the left of the middle line.

83. Beyond that (i.e. the large gate of the fifth court) on the surrounding space should be constructed the sixth, and the seventh courts (*śālā*).

84. There should be (ordinarily) two courts (*prākāra*), and surrounding roads for the dwelling houses of men.

85-88. Their (i.e. of the courts) breadth etc., should be measured in rod (*daṇḍa*, of four cubits) from the innermost court to the end of the extreme limit (court), they should begin from three or four rods (*daṇḍa*), and end at nine or ten rods (*daṇḍa*), the increment being by two rods (*daṇḍa*); each of these (measures) should be of three kinds (the smallest, the intermediate, and the largest); the seven courts (*prākāra*) are thus described.

89. The rest should be constructed as said before (by the ancient architects), and they should be decorated with all ornaments.

90. The length of the large gateway (*mahā-gopura*) should be furnished with four doors.

91-92. The courts (*prākāra*) of divine and human buildings are stated (now): one, two, three, four, and five courts (*śālā*) together with (enclosure) walls should be constructed.

93. If there be a number of courts (*śālā*) partition walls should be constructed in between (to separate one court from the other).

94. The measurement of these (partition) walls (*śālā*) should not be made less or greater (than what it should be).

95-96. (The width of) all the respective passages for water should begin from two *aṅgulas* and end at six *aṅgulas*, the increment being by one *aṅgula*.

97-98. According to some, they (these measures) should begin from one *aṅgula* and end at five *aṅgulas*, the increment being by one *aṅgula* in the case of the water passage in the gate-house (*gopura*).

99-100. From the main building to the other end of the court (*śālā*) there should be ways for the downward passage of water; this water-door should be made at the bottom of the wall (extending) towards any convenient direction.

101. The measurement (thickness) of the wall (*śālā*) beyond and around the main building of the *Jāti* class should be two cubits.

102-104. Within those (walls) the measure of width of the first (court) should begin from four cubits and be increased by one cubit to forty cubits in the largest type; the five series of dimensions for (each of) the five (courts) ending at the extreme boundary wall are stated by the learned (architects) to be considered in the smallest, (intermediate, and largest) sizes in order.

Thus in the *Mānasāra*, the science of architecture, the thirty-first chapter, entitled:

The description of the courts.

CHAPTER XXXII

THE TEMPLES OF ATTENDANT DEITIES

1-2. The details of the (temples of the) attendant deities of all the gods round the entrance at the end of the courts (*prākāra*) will be described now.

3-4. For the purpose of making offerings to the elements (lit demons, *Bhūta*), the small altars (*pīṭha*, lit. seat, pedestal, temples) should be constructed around the innermost side of the circular walls, towards the eight quarters, namely, the east, etc., of the innermost court.

5-7. A group of eight (temples of) attendant deities should be constructed in those (quarters) of the innermost (first) court ; groups of the sixteen should be constructed in each of the second and the third courts, but in the third court, there may be made a group of (temples for) thirty-two attendant deities.

8-9. From (i.e. between) the third to the fifth court, should be constructed by the expert architects the refectory (i.e., temple kitchen where meals are prepared) ; the attendant deities thereof are described here.

10. Vṛishabha (bull of Śiva) should be installed in the east, and Āryaka in the south-east.

11. Kārtikeya (of the seven mothers) should be (installed) in the south, and Gaṇeśa in the south-west.

12. Subrahmaṇya should be installed in the west, and the goddess Jyeshṭhā in the north-west.

13. Keśava (Vishṇu) should be installed in the north, and Bhāskara (the sun god) in the north-west.

14. The temples of the group of these eight deities should be situated towards the eastern gate.

15--16. As regards the temples towards the western gate of the edifice Guha (?Kārtikeya) should be installed in the west; Vināyaka (Gaṇeśa) is said otherwise to be installed by the wise (architect) in the south-west.

17. The five deities (Bhāskara and others) should be installed between the north and the north-east.

18. The temple of Subrahmaṇya should be (situated) between the south-east and the south.

19. The (temple of the) goddess Kātyāyanī may, otherwise, be situated in the south, as well as at the gate (in the south).

20. The temple of Virabhadra should be constructed between the south and the south-west.

21. The elephant-faced (Gaṇeśa) should be (installed) in the south-west, and the grandfather (Brahmā) in the west.

22. The temple of (Īśvara or Siva who is) the Lord of one plot should be (situated) between the west and south-west.

23. The temple of the twin gods (Aśvin) should be constructed between the west and the north.

24. The temple of Sarasvatī (the goddess of learning) should be situated in the region of the north-west corner.

25. The temple of Ratī (goddess of love, Manonmanyā, one who maddens the mind) should be situated between the north-west and the north.

26. The temple of Dhaneśa (or Kubera, god of wealth) should be constructed by the wise (architect) in the north.

27. The temple of Janārdana (Vishṇu) should be situated between the north and the north-east.

28. In the north-east should be built the temple of Khetra-pāla (god of cornfield) or Vaṭuka.

29. The temple of Bhāskara (the sun god) should be situated between the north-east and the Brahmā quarter (centre).

30. As an alternative, the temple of Shaṇmukha (the six-faced, i.e., Kārtikeya) should be in the north-west.

31. These are the sixteen attendant (*parivāra*, family) deities mentioned by the great sages.

32. The details (of the temples) of the group of thirty-two attendant (*parivāra*) deities will be described now.

33. The temple of Vṛishabha (the Bull of Śiva) should be built in the east (the *Indra* quarter), and that of the Lord of Nandika (Śiva) in the *Satyaka* plot (in the east)[1].

34. The temple of Īśa (Śiva) should be built in the *Bhṛiṅga* plot, and that of Bhuvaneśa (Lord of the Universe) in the *Antariksha* plot (in the east)[2].

35. The treasury should be built in the south-east, and the temple of Indirā (Lakshmi, goddess of wealth) in the *Pūshan* plot.

36. The temple of Eka-danta (one-tooth) god should be built in the *Vitatha* plot, and that of Varuṇa (Jaleśa, god of water) in the *Gṛiha-kshata* plot.

37. The temple of Chāmuṇḍā should be built in the south, and the pavilion for gathering flowers (for worship) in the *Gandharva* plot.

38. In the *Bhṛiṅgarāja* plot should be built the pavilion for preparing the offerings of dishes (*naivedya*).

39. In the *Mṛiśa* plot should be the pavilion for keeping the clothes (of the deities), and in the north-west should be the temple of Vināyaka.

40. In the Dauvārika plot (beyond the gate) image of spike should be placed (lit. invoked).

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[1] For the identification of these and the following quarters which are more conveniently translated by 'plot,' see chap. VII, pages 35-43.

[2] The different quarters of the four directions and of the space inside are illustrated in diagrams given under chap. VII.

41. The images of the Triad(Brahmā, Vishṇu, and Śiva) should be installed in the same temple in the *Sugrīva* plot.

42. In the *Pushpadanta* plot should be built the pavilion for making the flower-garlands (for the deity).

43. The temple of Ardha-nārīśvara (Śiva-Pārvātī combined in one image with half male and half female) should be built in the west.

44. The pavilion for keeping jewels should be built in the *Asura* plot.

45. In the remaining plots should be built the pavilion for keeping the ornaments of gods.

46. In the *Roga* plot should be built a hall for keeping books (i.e., temple library).

47. The expert (architect) should build the temple of Shaṇmukha (the six-faced, Kārtikeya) in the north-west.

48. The jewel pavilion may also be built in the *Nāga* plot.

49. The pavilion for keeping in the ornaments of the gods may also be situated in the plot of *Mukhya*.

50. As an alternative, in the *Bhallāṭa* plot may be built the temple of Pārvatī (consort of Śiva).

51. In the *Soma* plot (in the north) should be built the temple of Vishṇu or of Manoja (god of love).

52. In the *Mṛiga* plot should be built the pavilion for keeping the perfumes and other things for bathing (the gods).

53. The image of Dakshiṇā should be installed in the *Adita* plot, and that of the last Dānava (demon) in the *Udita* plot.

54-55. In the *Īśa* plot (north-east) should be built one temple of the image of Rudra (Śiva) ; or (therein) should be the temple for sacrifice (with holy fire) or for offering dishes.

56-57. In the *Parjanya* plot should be the bathroom filled with water for bathing ; or (therein) should be the temple of the Rudra god, or the temple for making holy sacrifice.

58–59. The temple of Bhāskara (the sun god) should be built in the *Jayanta* plot; and the temple of Pāśupata (Śiva) in the *Iśa* plot (north-east); or therein the wise (architect) should build the bedroom (of gods, *Kāma* or *Sringāra* temple).

60. The images of the thirty-two attendant deities should thus be installed.

61. In the *Soma* plot (northern part) of the third (court) should be the room for keeping drinking water.

62. The images of the devotees should be installed in the *Bhriśa*, or the *Mahendra* plot.

63. In the *Jayanta* plot should be built a pavilion to keep the umbrella (*chhatra*) and the chowrles (*chāmara*) for the ceremonial reception of gods.

64. The granary (store room) should be built in the *Yama* plot (south), and the kitchen in the *Pāvaka* (i.e., *Agni*) plot (south-east).

65. In the *Gṛihakshata* plot should be built a hall to keep unhusked rice in, and in the *Isa* plot (north-east) a temple for sacrifice.

66–67. The residences of the assistant architects (*Sthāpaka*) should be situated in the *Gandharva*, or the *Bhṛingarāja* plot, and two houses for their family should be built in the *Pūshan* or *Vitatha* plot.

68. The (temple) treasury should be built in the *Soma*, *Bhrallāṭa*, and the *Mukhya* plots.

69. The arsenal (for keeping weapons) should be built in the *Pushpadanta* and the *Mṛiga* plots.

70. In the *Varuṇa* or the *Asura* plot should be built a pavilion for keeping together waste things.

71. In the *Nāga* or the *Mṛiga* plot should be built a pavilion for keeping the ornaments of the gods.

72. The bed-chambers should be built in the *Adita* or *Udita* plot.

73-74. The assembly hall (*Asthāna-maṇḍapa*, drawing room, or audience chamber) should be built in the four principal directions and the intermediate quarters; (therein) should also be built the washing rooms and the bathrooms.

75. In the *Griha-ksahata* plot or the *Yama* quarter (south) should be the carriage shed (lit. the rooms to keep the conveyances in).

76. At the furthest limit of the extreme compound wall should be built a shed for the servant-quarters[1].

77. A Phallus (of Śiva) should be installed in any convenient principal or intermediate quarter, if it be devotionally desired[2].

78. The houses for the architects (*Sthapati*) may, otherwise, be built in the south-east or north-west corner.

79. The houses of the temple-drummers (*Vādyakara*, a class of people living on professional music) should be situated in the *Satyaka* or *Antariksha* plot.

80. The houses of the temple dancers (*nāṭyakāra*) should be built in the *Pūshan* or the *Vitatha* plot.

81. The houses of the temple girls and others should be in the *Griha-kshata* plot or at the end of the *Mriśa* plot.

82. The houses of the temple-boys should be in the region between the south-west and the west (*Varuṇa* plot).

83. The houses of the *Ārāmakāras* (pleasures givers, gardeners ?) should be built in the region between the west and the north-west.

84. The houses of the permanent staff (*nityakarmakāra*, day-labourers) should be situated in the region between the north-west and the north.

85. The houses of the musicians (*gandharvas*) should be built in the region between the north and the north-east.

86. The music pavilion should be built in the region between the north-west and the west.

87. Beyond that or in the same rigion should be constructed the cow-sheds.

88. A well or a tank should be dug in the north-east (*Iśa* plot).

89. A guest house (*satra*) or a hermitage (*maṭha*) for the hermits should be built at the four corners.

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[1] According to a different construction it may imply a monkey-house

[2] For various classification of Phalli see Chap. LII, and the writers. *Dictionary*, pages 528—529).

90. The row of houses for the temple-guards (*Vīra-bhadra*) should be built in the neighbourhood (thereof).

91. Beyond the furthest boundary wall should be situated the houses fit for the residence of (all) castes.

92-93. In the west should be situated the houses of the Brahmans, and in the south the houses of the Kshatriyas; the houses of the Vaiśyas should be in the north, and those of the Śūdras in the east.

94. Beyond those the wise (architect) should build the houses of all other people.

95. The stables for the elephants and horses, etc., should be situated on the left side of the gate.

96. In the *Udita* plot or in the north-east corner should be built the half-pavilion (*ardha-maṇḍapa*)[1]

97. In the north-west or beyond it should be laid out a flower garden.

98. At the gates of all courts (*prākāra*) the houses for the bull (bullock-sheds) should be constructed.

99-100. A small altar for offerings to the elements (*bali-pīṭhaka*) should be constructed on the forepart of the house for the bull; as an alternative, the altar for the offerings may, otherwise, be built outside the gateway (*gopura*).

101-102. The wise (architect) should construct the altar for offerings (*bali-pīṭhaka*) in the space of one, two, or three rods (*daṇḍa* of four cubits) between the main edifice and the gateway (*gopura*).

103. The width of the altar (*pīṭha*) should be one, two, three, four, or five cubits.

104-105. The width of the altar (*pīṭha*) should be one-half, one-third, three-fifths, or two-thirds of the (width of the) main edifice.

106-107. The height of the altar (*pīṭha*) should be equal to its length, or greater by one-fourth, or one-half; and it (the height of the

[1] For details see the writer's *Dictionary*, pages 52-53.

altar) is stated to be measured from the plinth (*upāna*) up to the crowning fillet (*paṭṭikā*).

198. The height of the cyma (*padma*, lotus) should be made one-half the height of the altar (*pīṭha*).

109. Its width should be extended up to the corona (*vapra*) or the crowning fillet (*paṭṭika*).

110. The width of the cyma (*padma*, lotus) should be four and a-half parts out of the five parts of the breadth (of the altar).

111. The width of the creeper-like ornament (*karnika*)[1] should be one-third of the width of the cyma (*padma*, lotus).

112. The crowning fillet (*paṭṭa*) may be round as well, and its height should be equal to its breadth.

113-114. The steps (*bhàdra*) should be connected with the cyma (*padma*); its height should be made as that of the aforesaid (cyma); it should be round or quadrangular, or like that (step) of the main edifice.

115. The altar (*pīṭha*) should have the shape of the base, and the base should be symetrical to the edifice.

116-117. In the smallest type both its breadth and height should be twelve *aṅgulas*.

117 The smallest type of the altar (*pīṭhaka*) should be furnished with the elephant's ear-like (creeper) ornament over the cyma.

118-119. The measurement of the Vṛishabha (bull of Śiva) temple should be carried out as aforesaid; it should be made like a pavilion (*maṇḍapa*), or be of such measurement as would make it look beautiful.

The attendant deities of the Vishnu temple

120. The details of the attendant deities of the Vishṇu temple will be described now.

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[1]According to the *Kāmikāgama* (LIV·40) this ornament should be made like a "graceful creeper moving on account of being struck by the wind (see the writer's *Dictionary*, page 120).

121. The door-gods should be installed at the main gates of the five enclosure walls (*śālā*).

122-123. The image of the demon Chaṇḍa should be installed at the right side of the gate; and the image of the demon Prachaṇḍa on the left.

124. On the right side should be installed the image of Chakradhara (Vishṇu, the carrier of the disc), and on the left side that of the Pāñchajanyaka (Vishṇu, who carries the conch-shell).

125. Gaṇeśa should be installed on the right and Kātyāyanī on the left (side of the gate).

126. Bhāskara (the Sun) should be installed on the right, and Niśāpati (the moon) on the left (side of the gate).

127. Bhujaṅgeśa (Vāsuki, lord of snakes) should be installed on the right, and Divas-pati (the sun) on the left side of the gate.

128-129. These (images) should be installed (respectively) at the five gates of the five courts, from the first to the fifth: thus are described in order the ten door deities.

130. In front of the space from one enclosure wall to the other should be installed the image of Vainateya (the Garuḍa bird).

131. On the front side towards the north (of Garuḍa) should be the temple of Vishvaksena (Vishṇu).

132. Within the innermost court should be, as before, the altar for offerings (*bali-pīṭha*).

133. On the right side of the gate should be constructed the temple of Divaspati (the Sun).

134. In the south-east corner should, likewise, be the sheds for the animals (*mṛiga*).

135. Kātyāyanī is said to be installed in the south, and Vināyaka (Gaṇeśa) in the south-west.

136. The temple of Ananta (Vāsuki, the lord of serpents) should be in the west, and of the Vāsishṭa in the north-west.

137. Dhanada (giver of wealth, Kubera) should be installed in the north, and the Bhāskara (the Sun) in the north-east.

138. The temple of Brahmā (grand father), instead of Kātyāyani, may be built in the south.

139. And the temple of Śankara (Śiva), instead of Dhanada (Kubera), may be built in the north.

140 The group of eight attendant deities is thus stated; the group of sixteen attendant deities (will now be described).

141. There will be some difference here with regard to the (quarters for the temples of those) gods mentioned above.

142. The temple of Gaṇesa should be built in the south-east, and that of Guha (Kārtikeya) in the south-west.

143. The temple of Mahā-lakshmī should be built in the north-west. and that of Sudarsana (Vishṇu) in the north-east.

144. The temple of Śankara (Śiva) may be built also between the north and the north-east.

145. The castle (*durga*) and temple of Vishṇu should be built in the region between the two: the north-west and the north.

146. The temple of Chakra-mūrti (i.e. Chakradhara, Vishṇu) should be built in the region between the west and the south-west.

147. The temple of Balabhadra should be built in the south, and that of Ananta (Vāsuki) in the *Jayanta* plot.

148. The Buddha image should be installed in the south-west and the temple of the Pautrika[1] descendants), in the *Jayanta* plot.

149. The remaining deities should be installed as before: thus are described the sixteen attendant deities.

150-151. The temples of the group of thirty-two gods, comprising the twenty-four (Tīrthankaras) together with the (eight) Dikpālas (quarter masters) will be described now.

152. The temples of the ten Avatāras (incarnations of Vishṇu) should be built in a row within the first court.

153. As an alternative, of the ten incarnations, the *Matsya* (fish) and *Kūrma* (tortoise), as well as the (eight) Dikpālas (quarter-masters) may be excluded.

[1] If it implies the Jains, the Jainism would be the descendant of the Buddhism.

154. The gods of the temples mentioned above should be selected in accordance with one's liking.

155. The attendant deities of Vishnu should thus be composed, the remaining being selected as aforesaid.

156-157. The Buddha and the Jaina temples should be constructed according to the rules laid down in their own sciences (of architecture, *śāstra*); and their riding animals, and altars (*bali-pīṭha*) also should be constructed as aforesaid.

158. The Yakshas and Yakshis, and the (twenty-four) Tīrthaṅkaras should comprise their (of Buddha and of Jina) family (attendant) deities.

159 161. The families of such other minor gods and goddesses, as well as their riding animals should be selected from the *Bhūtas*, *Piśāchas Khetrapālas*, *Gaṇas*, and others.

161. The altars (*pīṭha*) thereof should be constructed inside or outside (the main temple).

162-165. Within the precincts of the temples of Chāmuṇḍā, Śaṅkara, and Mahā-vishṇu, of Buddha and Jina, and of such other minor deities, and at the gateways (*toraṇa*) of the colleges (*śāsrālaya*) the attendant deities mentioned above should be installed.

166. Although an amount of labour may be saved if those (temples of attendant deities) be not built, it would bring prosperity if they are constructed.

167-168. As it is observed now a days, all the groups of the attendant deities should be preferably installed around the main temples and the gateways (*gopura*), etc., whereat are installed Śaṅkara (Śiva) with his riding animal Vṛishabha (Bull), and Vishṇu with his riding animal Garuḍa.

Thus in the *Mānasāra*, the science of architecture, the thirty-second chapter, entitled:

The description of the temples of attendant deities.

CHAPTER XXXIII

THE GATEHOUSES AND THE WINDOWS

1-2. The characteristic features of the gatehouses belonging to the divine (i.e., temples) and human (i.e., residential) buildings, gathering together their essential measure, will now briefly be described in this science of (of architecture).

3-4. The measurement prescribed for the divine buildings must not be used in the human dwellings, but the measurement suitable to the human buildings may be also applicable to the divine buildings (temples).

5. The small size measurement should be employed in the small (type of) buildings, and the large size measurement in the large buildings.

6-7. Should the reverse be done through ignorance, destruction of the structure (lit. place) and the loss of money (wealth) will be (the result); the measurement of (all) gatehouses should, therefore, be accepted and carried into effect as stated (here).

8-11. The gate house called the *Dvāra-śobhā* (beauty of the gate) is said to be (built) at the (enclosure wall of the) first court, that called the *Dvāra-śālā* (gate hall) in the second, that called the *Dvāra-prāsāda* (gate-palace) in the middle (third), that called the *Dvāra-harmya* gate-edifice) in the one (*prākāra*) added by me (i.e.,) fourth

court), and that called the *Mahāgopura* (great gatehouse) at the enclosure wall (*kudya*) of the furthest boundary (i.e., fifth court) : the architect should thus build (the gatehouses) at the entrance of compound walls.

12-13. Three, five, seven, (nine), and eleven cubits : these are said to be the five kinds of width of the (gatehouse called the) *Dvāra-śobhā*.

14-15. The five kinds (of width) of the *Dvāra-śālā* are said to begin from five cubits and end at thirteen cubits (the increment being by two cubits).

16-17. The five kinds of width of the *Dvāra-prāsāda* are known to the learned to begin from seven cubits and end at fifteen cubits (the increment being by two cubits).

18-19. The (five kinds of) width of the *Dvāra-harmya* should begin from nine cubits and end at seventeen cubits, the increment being by two cubits.

20-21. And the five kinds of width of the *Mahā-gopura* are said to begin from eleven cubits and end at nineteen cubits (the increment being by two cubits).

22-23. In all (types of) gatehouses the length should be greater than the width by one-fourth, one-half, or three-fourths, or preferably twice that.

24-25. As an alternative, with regard to the Śobhaka (i.e., *Dvāra-śobhā* type of gatehouses) it (the width) should be increased by two cubits to forty cubits ; (and the corresponding) twenty varieties of its length (should be also increased in accordance with the aforesaid proportion) ending at thrice (lit. three times cubits of) the width.

26-27. Beginning (as before) the width of the *Dvāra-śālā* (type of gatehouses) should be increased by two cubits up to fifty cubits, and there should be (the corresponding) twenty-five varieties of the length.

28-29. The width of the *Dvāra-prāsāda* should be increased in order (i.e., by two cubits), as before, and should end at sixty cubits, and

there should be (the corresponding) thirty varieties of the length (calculating) as before.

30-31. (As before) the width of the *Dvāra-harmya* should be increased by two cubits up to seventy cubits, and there should be (the corresponding) thirty-five varieties of length.

32-33. The width of the *Mahāgopura* should be increased by two cubits to eighty cubits, and there should be (the corresponding) forty varieties of length.

34-35. The increment of the length may, otherwise, be by one cubit (instead of two); the length may be increased up to twice the width, the increment being by one part (of the width).

36. The width (of the five kinds of gatehouses) from the *Dvāra-śobhā* to the *Mahā-gopura* is stated (below) in (terms) of parts,

37. The width of the *Dvāra-śobha* should be divided into two, three, four, five, and six parts (? in the five courts respectively).

38-39. The width of the *Dvāra-śālā* should be similarly divided into five, six, seven, eight, and nine parts.

40-41. The width of the *Dvāra-prāsāda* should be similarly divided into seven, eight, nine, ten, and eleven parts.

42-43. The width of the *Dvāra-harmya* should be discreetly divided into eight, nine, ten, eleven, and twelve parts.

44-45. The width of the *Mahā-gopura* should be similarly divided into nine, ten, eleven, twelve, thirteen, and fourteen (equal) parts.

46-47. The height should be one-half or three-fourths of, or equal to the width: such should be the height of the door-pillar from the plinth to the top of the pillar.

48 A half of that (the height of the door-pillar) should be the breadth of the door (*dvāra*), and the width (of the door-pillar) should be one-eighth of that (i.e., its height).

49-51. One-and one-fourth, one-and-one-half, or one-and-three-fourths of the breadth, or twice that should be the height (of the door), in the human buildings of all kinds (i.e. residential) in particular it should be greater than the breadth by one-fourth up to one-half.

52. In case f the five, six, and seven parts (of the breadth), the height may be twice or two and-a-half times (those parts).

53. The height of all the doors (*dvāra*) should be (generally) two-and-a-half times or thrice (the breadth).

54. The breadth may be of as many parts (i.e., varieties) as desired, but it must be proportionate to the respective height.

55. The gatehouse should be constructed with the breadth (which should be) one-half of its height.

56. If there should be a high pedestal this measure (of height) may exclude (the height of the former).

57. The (application of the) five kinds of height consisting of the *śāntika* and others will be described now.

58-61. The height should be greater than the width of the gate-house by one-fourth, one-half, and three-fourths, twice, and two-and-one-fourth times as much: these are the five heights of the door (*dvāra*) in all the (five) gatehouses (*gopura*).

62. The measurement of the door (*dvāra*) will be stated alternatively in terms of cubits.

63-64. The five varieties of the breadth of the door in the gate-house called the *Dvāra-śobhā* should begin from one cubit and end at two cubits, the increment being by six *aṅgulas* (a quarter cubit).

65-68. The five varieties of the breadth of the door in the gate-house called the *Dvāra-śālā* should begin from two cubits and end at three cubits; the five kinds of the breadth of the door in the *Dvāra-prāśāda* of the middle (third, court) should begin from three cubits and end at four cubits, the increment being by six *aṅgulas* (in each case).

69-70. The five varieties of breadth of the door in case of the *Dvāra-harmya* (of the fourth court) should begin from four cubits and end at five cubits, (the increment being by a quarter cubit)

[1] *Paushṭika*, *Jayada*, *Sarva-kāmika* or *Dhanada*, and *Adbhuta*: these five heights are respectively equal to, $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$, and twice the breadth (see chapter XXXV 22–26, and the writer's *Dictionary*, pages 82-83).

71-72. The five varieties of breadth of the door in the (*Mahā*) *gopura* are said to begin from five cubits and end at six cubits, (the increment being by a quarter cubit).

73-76. As an alternative, the breadth of the (door of the five) gatehouses, from the *Dvāra-śobhā* to the (*Mahā*) *gopura*, should begin respectively from one, two, three, four, and five cubits, and end at five, six, seven, eight, and nine cubits, the increment being by one cubit; the height of all these kinds of doors should be twice the breadth (in each case).

77. Thus are described the doors of the gatehouses of gods (i.e., in the temples); those (of the gatehouses) in the human buildings should be specially (considered).

78-80. (In such residential buildings) the height of the door should be made twice (the breadth) less one-eighth, one-seventh, one-sixth, one-fifth, or one one-fourth.

81. The door should be constructed extending from above the plinth (*janman*) to below the crowning fillet (*uttara*).

82. Thus should be made the height of the door, and the lintel (*paṭṭikā*) should be included therein.

83. The rest (i.e., the remaining parts of the door) should be discreetly made; all the doors should thus be constructed.

84. I shall now describe the measurement of the gatehouses in comparison with that of the main edifice.

85-87. The breadth of the *Dvāra-śobhā* and the other gatehouses should be equal to the breadth of the main edifice, or be greater by one-fourth, one-half, three-fourths, or be twice.

88. Each of these measures should be of five kinds, and the length should be as before.

89-92. The base of the pillar (of the gatehouses) may be equal to the base of the main building, or the height of the base of the pillar of the main building being divided into four, five, six, seven, and eight parts, the height of the base of the pillar in the *Dvāra-śobhā* and the other gatehouses should be one part less in each case.

[1] For details see chapter XXXIX.

93. The height of the doors (in the gatehouses) is known to be made (i.e. exclude) the (height of the) pedestal.

94-96. In the *Dvāra-śobhā* (type of gatehouses) there should be a single storey, and in the second (i.e. the *Dvāra-śālā*) there should be two storeys; there should be built three storeys to compose the body of the *Dvāra-prāsada*, and four storeys for the *Dvāra-harmya*; and the *Mahā-gopura* should be made five-storeyed[1].

97. In places of great (importance) there may be other (kinds of) gatehouses furnished with up to sixteen (? seventeen) storeys.

98-99. The sigle-storeyed one (i.e., the *Dvāra-śobhā*) may also be of three kinds (namely), one, three, and five-storeyed, and may even be raised to the thirteenth storey, the extension being by two storeys.

100-101. The three kinds of the two-storeyed one (i.e., the *Dvāra śālā*) are said to begin from two, three, or four storeys, and end at fourteen storeys, the extension being by two storeys.

102. The three-storeyed one (i.e.. the *Dvāra-prāsāda*) is (also) stated to be of three kinds (namely), from three-storeyed to fifteen-storeyed.

103-104. The four-storeyed one (i.e., the *Dvāra-harmya*) is said to be of three types, namely, the smallest, etc., beginning from four, six, and eight storeys, and ending at sixteen storeys

105-106. The three types of the five-storeyed one (i.e. the *Mahā-gopura*) should begin from five, seven, or nine storeys, and end at seventeen storeys, the extension being by two (storeys).

107-108. With regard to temples, the height (i.e, the number of storeys of the gatehouses) may be equal to, or greater, or less than the height of the main buildings: this has been laid down by the ancients with regard to the *Dvāra-śobā* and all other gatehouses.

109-110. With regard to the human (residential) buildings, the height (i.e., the number of storeys, of the gatehouses) should be equal to

[1] Compare line 97, 106 where the maximum number of storeys is stated to be seventeen; according to a different reading it may be eighteen also.

or less than the height of the main buildings; if it (the gatehouse) be furnished with more storeys than the main edifice, the king and the kingdom will be destroyed.

111. Thus the wise (architect) should construct the *Dvāra-śobhā* (type of gatehouses).

112. The other gatehouses also should, likewise, be constructed as directed above.

113-115. The wise (architect) should divide the height of the door pillar into four (equal) parts; (of these) the height of the pedestal (*upapīṭha*) should be one part, and the entablature (*masūraka*) equal to that (i.e., one part); and the height of the pillar proper should be two parts; it should be made with its characteristic features.

116-118. The height of the door-pillar being divided into seventeen parts, the pedestal should be five parts, and the entablature four parts, (and of the remainder) the height of the pillar should be made twice that of the base.[1]

119-121. The expert (architect) should divide the height of the door-pillar into twelve parts; (of these) the height of the pedestal should be two parts and the base the same, and twice those (i.e. eight parts) the height of the pillar.

121-123. The height of the door-pillar should be again divided into nineteen parts; (of these) the pedestal should be seven parts, the base four parts, and the height of the pillar eight parts.

124-126. The height of the door-pillar being, likewise, divided into six parts, the height of the pedestal should be directly (from the bottom) one part, the base one part, and the height of the pillar should be made (twice those parts).

127-129. The height of the door-pillar being divided into twenty-one parts, the height of the pedestal should be made of nine parts, the base should be four parts, and the height of the pillar eight parts.

[1] That is, the pillar should be of 5⅓ parts, and the base of 2⅔ parts.

130-132. The height of the door-pillar should be divided into eleven parts ; (of these) the height of the pedestal should be five parts, the height (lit. measurement) of the base two parts, and the height of the pillar four parts.

132-135. As another alternative, the height of the door-pillar being divided into twenty-three parts, the pedestal should be eleven parts, and the base four parts, and the height of the pillar eight parts.

135-137. (The same) being again divided into six parts, the pedestal should be three parts, the base one part, and the height of the pillar two parts.

137-138. The members above that (the pillar) from the entablature (*prastara*) up to the end of the finial (*śikhā*) in the (gatehouses of) various storeys will now be described.

139-141. The entablature (*mañcha*) should be equal to the base, and the height of the neck (*gala*) the same ; the height of the spherical roof (*śikhara*) should be made twice the height of the neck ; and the height of the spire (*śikha*) should be half the spherical roof (*śikhara*), and the small dome (*stūpi*) should be one-third of that (spire).

142. The one-storeyed structure is thus described ; the gatehouses of two and more storeys should be similarly (built).

143. The gatehouses are specially distinguished (into three types), as the smallest, the intermediate, and the largest.

144. The relative measurement (of the members), from the entablature (*prastara*) to the top of the finial (*śikhā*), will be described (here).

145-147. (The measurement of the entablature, etc.,) is now stated in comparison with the measurement of that (pillar) for which the base is made : the height of the entablature should be equal to the height of the base, or less by one-fifth, one-sixth, one-seventh, or one-eighth.

148. The height of the pillar in the upper storeys is now considered in comparison with the pillar in the lower storeys.

149-150. (The pillar in the lower storey) being divided into eight, seven, six, or five parts, the height of the pillar in the upper storeys should be less (by one part in each case).

151. The entablatures should, likewise, be measured in each storey.

152. Thus should be carried out the comparative measurement (of the members) in the smallest (type of) gatehouses.

153-154. The height of the base should be (divided into) nine, eleven, and thirteen parts; the height of the entablature should be one-half of these parts (in each case).

155. The height of the pillars in the lower storeys being divided into those parts, the height of the pillars in the upper storeys should be less by one part (in each case).

156 The entablatures should be, likewise, measured in each storey.

157-158. The measurement of which (i.e the capital) is extended to the end of the fillet of the cornice (*uttara*), above that (i.e., the capital) should be fixed the entablature, and the platform (*vedikā*) above the latter should be one-half of that (entablature).

159. Twice that (platform) should be the height of the neck (*gala*), and the head (*śiras*) should be twice the height of the entablature.

160-161. The height of the spire (*śikhā*) should be one-half of the spherical roof (*śikhara*). Those are the relative measures (of the component members) in the intermediate type of the gatehouses.

162. The relative measurement (of the component members) in the largest type of gatehouses will be now stated according to rules.

163. As before, they are distinguished as one-storeyed, two-storeyed, and so on in particular.

164-166. The height of the door-pillar, the breadth of the door, the height of the pedestal, the base, and the height of the (main) pillar, and the rest should be made as said before; the measurement of the upper (members) will be stated (below).

167-168. The height of the upper pillar should be three-fourths of the whole base (of the gate-house); (in another way) the height of the upper pillar should be three-fourths of the height of the lower pillar.

169. The upper entablature should be three-fourths of the lower ntablature (*mañcha*).

170-171 As an alternative, the height of lower pillar being divided into five, six, seven, eight, nine, or ten parts, the height of the upper pillar should be less by one part (in each case).

172. One-half of that (i.e., the entablature) should be the height of the platform (*vedikā*), and twice that should be the height of the neck (*grīva*).

173. The height of the spherical roof (*śikhara*) should be twice the height of the neck (*grīva*).

174. One-half of that should be the height of its spire (*śikhā*), and there should be five spires (*śikhā*) on the second storey.

175. The entablature is measured as before, and the lower pillar and the other members should also be as before.

176. The height of the platform (*vedikā*) should be one-half of the height of the entablature.

177. The ornamental mouldings (*kānta*) above the platform (*vedikā*) should be made as before.

178 Along the height of the second storey there should be furnished four, two, or (up to) seven port-holes (*netra*, eyes).

179. Thus is described the three-storeyed gatehouses The four and other storeyed gatehouses are described here.

180-181 One-half of the measure of the base being divided into six parts, the height of the entablature is said to be equal (to that), or four-fifths part.

182. The height of the upper pillar may, otherwise, be (divided into) twenty-five or twenty-six parts.

183. The upper entablature should be three-fourths of the lower (lit., first) entablature (*mañcha*).

184. The height of the pillar above should be four, four-and-a-half, or five parts.

185. The small entablature (*mañchaka*) above the upper pillar should be two and three-fourths parts.[1]

186. The upper pillar may be three and a-half or four parts.

187. The entablature (*mañchā*) should be two and a-half parts, and the platform (*vedikā*) half a part.

188. Twice that (i.e., one part) should be the height of the neck (*gala*), and the head (*śiras*) equal to the neck, (i.e., one part).

189. The height of the small dome (*stūpi*) should be made of half the height of the head (*śiras*).

190. The number of spire (*śikhā*) is said to be nine as in the second storey described before.

191. As an alternative, there should be only one quadrangular dome (*stūpi*, small spire) with four faces (i.e., sides).

192. Thus is described the four-storeyed (gatehouses); the five-storeyed ones will be described now.

193. The height should be divided into as many parts as before and the entablature also should be as before.

194. The height of the pillar above should be five and a-half parts

195. The height of the second entablature should be two-and-three-fourths parts.

196-197. The pillar above should be five parts, the height of the third entablature two-and a-half parts, and the pillar above that four. parts.

198. The height of the fourth entablature should be two and a quarter parts.

199. Above that the pillar shuuld be four parts, and the (fifth) entablature two parts.

200. The height of the platform (*vedikā*) should be one part, and the height of the neck (*griva*) two parts.

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[1] Compare line 198.

201. The height of the spherical roof (*śikhara*) should be two parts, and the height of its spire (*śikhā*) one-half of the spherical roof (i.e., one part).

202. There should be two foreheads, (but) one large nose-like vestibule (*nāsi*), and it should be furnished with eleven spires (*śikhā*).

203. The entablature, etc. of the other storeys also should be as before.

204-205. The pillars, entablatures, platforms, necks, etc., in each storey, should, likewise, be measured.

206. The measurement of the spherical roof (*śikhara*) and the spire (*śikhā*), etc., should be discreetly made as before.

207. Or (the measure of the) *Dvāra-śobhā* and other gate-houses may be specially (specified).

208-210. The height from the plinth to the top of the dome should be twice the breadth; it should be of three kinds, namely, twice, and greater or less than twice by one-half; or one and one-half, one and three-fourths, and twice.

211. This should be (the measure) of the smallest type of the gatehouse, that of the intermediate type is described (below).

212-214. The height in the intermediate type is said to be less than the height in the smallest type by one-fourth, or one-half (of the breadth); and the height in the largest type of gatehouses should be less than the height in the intermediate type by one-fourth or one-half of its breadth.

215. The members along the entablature, from the beginning to the end, and above that up to the end of the dome, should be (measured) as before.

216. The relative measurement of all these (members) is now described in number of parts.

217-218. It (the height upper portion) being divided into four parts, the height of the neck (*gala*) should be one part, the height of the spherical roof (*śikhara*) two parts, and the height of the spire (*śikhā*) one part.

219. Thus is described (the relative measure of the upper members in) the first storey; the relative measure (of those) of the second storey is stated (below).

220-223. The same (height) being divided into sixteen parts, the upper pillar should be of five parts, the height of the entablature should be two parts, and the height of the platform (*vedi*) one part; the height of the neck (*gala*) should be two parts, and the height of the head (*mastaka*) four parts; half of that (i.e., two parts) should be the height of the dome (*stūpi*), and the rest should be as before.

224-229. The upper height of the third storey is known to be divided into twenty-five parts (of these); the height of the second pillar should be six parts, and the frieze (*prati*)[1] two parts and a-half; above that, the height of the third pillar should be five parts and a-half; the next (lit. last) two parts are said to be the height of the platform (*vedikā*); the height of the neck (*grīva*) should be one part, and the height of the spherical roof (*śikhara*) four parts; and the height of the dome (*stūpi*) rising from the frieze (*prati*)[2] upwards up to the spire (*śikhā*) is said to be two parts.

230-236. The (upper) height of the fourth storey should be divided into nineteen parts; of these parts, the height of the second pillar should be four parts and a half; the measurement of the entablature above that should be one part and a half; the height of the pillar (above) should be three parts and a-half, and the corona (*kapotaka*) one and one-fourth parts; the pillar (above) should be two and three-fourths parts, and the height of the entablature one part; half of that should be the height of the platform (*vedikā*), and the height of the neck (*grīva*) one part and a-half; twice that (i.e., three parts) should be the height of the spherical roof (*śikhara*), and half of the latter (i.e., one and a-half parts) the height of its spire (*śikhā*).

232-244. The height from above the entablature to the end of the dome (*stūpikā*) being divided into thirty parts, the height of the

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[1],[2] Ordinarily the crescent shaped frieze (*Kamikagam*, LIV. 46, see the writer's *dictionary*, page 361); here it may mean the whole entablature as implied by the context.

pillar should be five parts; the height of the entablature should be two parts, and the height of the pillar (above) four parts and a-half; the height of the entablature is said to be one and three-fourths parts; the height of the pillar (above) should be four and one-fourth parts, and the entablature (*mañchaka*) above one and a-half parts; the height of the pillar (above) should be four parts and a half, and the height of the entablature one and one-fourth parts; above that the height of the platform (*vedi*) should be half a part, and the neck (*kandhara*) one part and a-half; twice that (i.e., three parts) should be the height of the spherical roofs (*śikhara*), and the height of its spire (*śikhā*) one fourth part.

245 Thus is described the five-storeyed gatehouse, the rest being as before.

246-247. Also the relative measurement (of the members) from the plinth (*pāduka*) to the end of the spire (*śikhā*) of the *Dvāra-śobhā* and the other gatehouses as stated by the wise teachers in number of parts (will be specified here).

248-252. The height of aforesaid measurement being divided into ten parts, the height of the pedestal (*upapīṭha*) should be two parts, and the base (*kuṭṭima*) should be one part out of (those); twice that (i.e., two parts) should be the height of the pillar, and half of the latter (i.e., one part) the height of the entablature; equal to that (i.e., one part) should be the height of the neck (*grīva*), and twice the latter (i.e., two parts), the height of the spherical roof (*śikhara*); one part should be the height of its spire (*śikhā*), and the measurement of the rest should be as before.

253. Thus is described the single storeyed (gatehouses); the (relative) measure of the (component) parts of the two-storeyed (gatehouses) is described (below).

254-260. (Its height) from the plinth (*janman*) to the top should be divided into nineteen parts; (of these), the height of the pedestal (*upapīṭha*) should be three parts, and the base (*kuṭṭima*) two parts; the height of the pillar should be five parts, and the

entablature (*mañchaka*) one and three-fourths parts ; the height of the main (*mūla*) pillar should be likewise two and three-fourths parts ; the frieze (*prati*) and the corona (*kapota*) should be one part, and half of that the height of the platform (*vedi*) ; the height of the neck (*grīva*) should be one part, and the height of the spherical roof (*śikhara*) one part ; half of that (i.e., half a part) should be the height of the small dome (*stūpi*), and the rest should be made as stated before.

261–268. As before, the height of the three-storeyed (gatehouses) being divided into twenty-one parts, the height of the pedestal (*upapīṭha*) should be four parts, and the base (*masūraka*) one part and a half ; the height of the pillar should be three parts, and the corona (*kapota*) one part and a-half ; the height of the pillar (above) should be two parts and a-half, and the height of the entablature one part ; the pillar (*jaṅghā*) should be two and one-fourth parts ; and the height of the entablature (*mañcha*) three-fourths part ; above that the height of the platform (*vedi*) should be half a part, and the upper neck (*grīva*) one part ; the head (*mūrdhni*, lit., the crown of the head) should be twice the neck, and the height of the spire (*śikhā*) equal to the neck (i.e., one part) ; and the rest should be made as before.

268–277. The four-storeyed (gatehouses) is described here : (its height) from the plinth to the dome being divided into thirty-one parts, the height of the pedestal (*upapīṭha*) should be six parts, and the measurement of the base two parts ; twice that (i.e., four parts) should be the height of the pillar, and the small entablature (*mañchaka*) one and three-fourths parts ; the pillar (above) should be three and one-fourth parts, and the height of the entablature (*mañcha*) one part ; the length (i.e., the height) of the pillar (above) should be three parts, and the corona (*kapotaka*) one and one-fourth parts ; the height of the pillar above should be made of three parts less one-quarter ; the entablature (thereupon) should be one part, and half of that should be the height of the platform (*vedikā*) ; twice that (i.e., one part) should be the height of the neck (*grīva*), and the head (*śiras*) twice the height of the neck (i.e., two parts) ; one part should be the

height of the small dome (*stūpikā*), and the rest should be made as before.

278-288. The height (of the five-storeyed gatehouses) from the plinth to the dome (top) should be divided into forty-eight parts; of these parts, the plinth (*upāna*) should be half a part, the pedestal (*upapīṭha*) eight and three-fourths parts, and the height of the base two and a-half parts; twi e that (i.e., five parts) should be the height of the pillar, and half of the latter (i e., two and a-half parts) the height of the entablature; the height of the pillar should be four and a-half parts, and the entablature (*mañchaka*) two and one-fourth parts; the pillar (above) should be four and one-fourth parts, and the entablature (*mañcha*) two parts; the height of the pillar (above) should be four parts, and the entablature (*mañchaka*) one and three-fourths parts; the height of the pillar above that should be three and three-fourths parts, the entablature should be one and a-half parts, and the height of the platform (*vedi*) three-fourths part; twice that (i.e., one and a-half parts) should be the height of the neck (*gala*), and the height of the spherical roof (*sikhara*) three parts; and the height of the spire (*sikhā*) should be one part and a-half; thus is known to be the five-storeyed (gatehouses).

289. The rest of the five classes of gatehouses, namely, the *Dvāra-sobhā* and others, should be measured similarly (lit. as before).

290. The description of the exterior (*ghana*) and also the interior (*aghana*) measurement (of the component members of the gatehouses) will be set fourth now[1].

291. The whole length and breadth of the *Dvāra-sobhā* and all other gatehouses should be as before.

292. The measurement which is taken by the exterior and the opposite (i.e., interior), and includes the measurement up to the apex (*chūlikā*) (is known as the *ghana* and *aghana* measures).

[1] Compare lines 292 to 330, 365, 483, 565—566, 593, and the writ.r's *Dictionary*, pages 2, 3, 190.

293-294. The projection (*nirgama*) of the length (*āya*) of the *Dvāra-śobhā* and all other gatehouses should be of five kinds beginning from one cubit and increasing by six *aṅgulas*.

295-296. As an alternative, when (the projection) is considered from the wall-pillar (*bhitti-pāda*) it should be measured in rod (*daṇḍa*) (measurement); it then should begin from one rod (*daṇḍa*) and end at ten rods (*daṇḍa*).

297-299. If it (the projection) be measured from the edifice (instead of the wall-pillar) there would be no defect, but if the measurement be made disproportionate (lit. broken) out of ignorance it would cause all defects; and therefore the learned (architect) should (take care to) avoid it (any alteration) in the measurement of the projection.

300-301. Of the five parts of the width, the inner chamber (*garbhageha*) [1] should be three parts, and the surrounding wall should be one part; thus is described the single-storeyed (gatehouses). [2]

302-306. In the two-storeyed (gatehouses) the width should be divided into seven parts (of which), the central hall (*garbha-geha*) should be four parts, and the thickness of the surrounding wall one and a-half parts; the pinnacle-turret (*kūṭa-śālā*) should be constructed of half a part out of the wall portion (i.e., one and a-half parts); the corridor (lit. interspace, *antarāla*) should be equal to that (i.e. a-half part), and the inner chamber (*madhya-koshṭha*) (within the central hall) three parts; from that inner chamber, between the two pinnacle turrets (*kūṭa*), should be constructed the corridor.[3]

307. The corridor should be specially decorated with the cage-like windows (*pañjara*), etc.

308. Thus is described the two-storeyed (gate houses); this should be built in the *Dvāra-śālā* (type of gate houses).

[1] Compare lines 305, 309, 313 318, etc.

[2] The account is rather incomplete here; in the subsequent accounts fuller details are given (see lines 302—308, 309, etc.).

[3] The three other sides between the inner chamber and the central hall are designated as inner balcony compare lines 310, 214, etc.)

309–311. Of the nine parts of width of the three-storeyed (gate-houses), the central hall (*garbha-geha*) should be three parts, the surrounding wall (on each side) one part, and the balcony (*alinda*) one part; beyond that (balcony), of the surrounding part should be constructed, as before, the pinnacle-turret (*kūṭa-koshṭha*), etc.

312. Such should be the *Dvāra-prāsāda* (type of gatehouses). The *Dvāra-harmya* (type) is described now.

313–316. Of the ten parts of the width, the inner chamber (*garbha geha*) should be three parts, beyond that should be the surrounding wall and then the surrounding balcony, of one part each; the corner tower (*karṇa-harmya*), etc., should be (made of) one part each, and the pinnacle (*kūṭaka*) of one part around; the outer hall (*mukha-śālā*) should (thus) be of five parts; and the remainder (i. e., the part between the inner and other halls) should be the corridor (*antarālaka*).

317. Thus is described the four-storeyed (gatehouses). The five-storeyed (type) is described here.

318–323. Of the eleven parts of the width, the inner chamber (*nāli-geha*) should be three parts; beyond that the thickness of the (surrounding) wall should be two parts increased by one (i. e., three parts), and beyond the latter the balcony (*alinda*) should be constructed of one part around; the pinnacle turret (*kūṭa-śālā*) should be made of one part, and similarly (i.e., of one part) the surrounding corner tower (*karṇa-harmya*); the breadth of the pinnacle (*kūṭa*) should be one part; the great (outer) hall (*mahā-śālā*) should be three parts; the corridors (*antarāla*) should be made of one part each, out of the smaller (inner) hall (*kshudra-śālā*).

324–325. In (the gatehouses of) other storeys, (i.e., the six, seven etc.), the width should be increased to twice the number of those parts (i. e., twenty-two), the increment being by one part (in each of the higher number of storeys), and the pinnacle-turrets, the halls (*kūṭa-koshṭha*), and all other members should be constructed with some desirable dimensions.

326–327. The (ornamental) members other than the pillar connected with the front door (*bhadra*) as well as the (door) pillars (them-

selves) should be constructed in their proper places ; there would be no defect if they be made either prominent or high (as one likes).

328–329. The projection (*nirgama*) of the front door (*bhadra*) should be one, two, or three rods (*daṇḍa*) ; and of the other (members) (the projection) should be discreetly made in their proper places, in proportion to the main edifice.

330. Thus is described the exterior (*ghana*) measurement ; the interior (*aghana*) measurement will be stated now.

331. The division into parts, of the breadth and the length, should be discreetly made as stated before.

332. The breadth and the length should be made of two and three parts (respectively).

333. There being three parts (in the length) of the wall (*bhitti*), the breadth should be one part

334. And of the remainder should be (made) the central hall (*garbha-geha*) with an enclosure (*veśana*) in the centre.

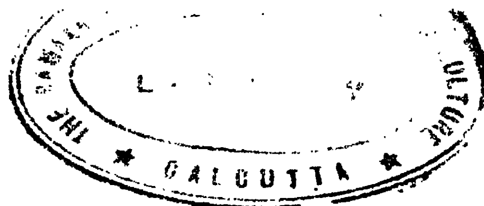
335–336. As an alternative, the expert (architect) should divide the length into four parts ; the breadth of the wall should be one-half of the (breath of the) main building (*harmya*), and the remainder should be (the width of) the central hall (*garbha-geha*).

337. The width of the surrounding balcony (*alinda*) in front of the door should be one-half of the wall.

338. The breadth of the front door (*bhadra*) should be three parts, and its projection (*nirgama*) one part and a-half.

339–340. The central hall (*madhya-koshṭha*) should be nine, ten, or eleven parts, and its projection (*nirgama*) two parts.

341–345. The front door (*bhadra*) in the middle of that (length) should be of five, six, seven, or eight parts ; the projection (*nirgama*) thereof should be made of one part ; and of six or seven parts should be made the corridor (*antarāla*) connected with the central hall (*madhya-śālā*) of the width of two or three parts, and the projection hereof should be made of one part.



346. The interspace (*antara*) between those two (members), should be beautifully decorated.

347. Likewise should be constructed one corner tower (*karṇa-kūṭa*), and especially over the corridor (*antaḥ*, for *antara*).

348–349. Beyond that corner tower (*karṇa-kūṭa*) with the (one) part surrounding the wall is stated to be constructed the gutter (lit. reservoir of water) extending over all the storeys from top to bottom.

350. The remaining should be constructed as before, and thus is described the three-storeyed (gatehouses).

351–353. In the width of the central hall (*madhya-koshṭha*) there should be one part more than before; the rest should be made as before, but all the members should be symmetrically (lit. discreetly) constructed: thus should be the *Dvāra-prāsāda* (type of gatehouses); it should be made three-storeyed.

354–355. The arrangement of the four-storeyed gatehouses which (has been introduced) by me is (described) now: there should be eleven parts for the breadth, and the length is known to be (ascertained) as before.

356–360. From eight parts to one part should be (the breadth) of the fifth type of (i.e., fivestoreyed gatehouses; up to twice that (breadth) by the increment of one (quarter) part [1] are stated to be the length; the wall and the (inner) hall (*bhitti-geha*) are stated here: the breadth of the wall (*kuḍya*) should be three, four, five, six, or seven parts, and the remainder should be the central hall (*nāla*, *i.e.*, *garbha-geha*): thus is described the fifth type (of gatehouses).

361. There should be (left) one or two parts beyond the wall in each storey.

362. The breadth of the entrance door (*bhadra*) at the forehead (*lalāṭa*) should be one part, and its projection (*nirgama*) half a part.

363. On the ground floor (lit. in the last storey) should be a verandah (*alindaka*), or only the wall (*bhittika*) supported on small pillars (*aṅghrika*).

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[1] That is 1¼, 1½, 1¾ and twice as detailed before.

364. The perforated screens (*jālaka*) should be discreetly fitted in between (lit. in the nterspace of) the pillars, in place of the verandah (*alindaka*) on th ground floor.

365 The expert (architect) should make the wall (*bhitti*) solid (*ghana*) or hollow (*aghana*).

366. Two doors should be opend at the middle of the length of the wall (i.e., one beıng in the front and the other at the back).

367-368. In the central hall (*geha*) as well as at the forehead (*lalāṭa*) the floor (*tala*) should be (lit raised, have the shape of) the pedestal; or it may be fittingly made like a rampart (*vapra*) with a desirable height.

369. The gatehouses (*gopura*) are known to be furnished with pillars made breadthwise, extending up to the crowning billet (*uttara*).

370. The wall should be made of one part out of the two, or three parts of that (whole height).

371. If one part is to be left out (beyond the wall) it should be close to the outside.

372-374. The ceiling (*tauli*) should be extended (i.e., raised in height) from the bottom to the top in a straight line; the expert (architect) may optionally make the ceiling one-fourth in dimension (i.e., of the whole height of the gatehouse) if that fits in; and at its top should be constructed the parapet staffs (*jayantika*) connected with the roof (*prachchhādana*).

375-377. As an alternative, the breadth and the length (of the gatehouse, may be three and four parts (respectively); the thickness of the wall should be; half a part, and the remainder the measurement (width) of the central hall (*geha*); equal to that (wall, i.e., half a part) should be the surrounding verandah (*alinda*), and the rest should be as before.

378-380. As an other alternative, the dimension (of the length) may be one part more; the thickness of the wall should be as before,

and the surrounding verandah one part; the middle door (*bhadra*) should be three parts, and the rest should be made as before.

381-385. (Again), the (whole) breadth being four parts, the length should be five parts, and the thickness of the wall half a part, and the remainder should be the central hall (*garbha-geha*); there should be a door (*dvāra*) on all sides, and the middle door (*madhya-bhadra*) should be of three parts, its projection (*nirgama*) should be made of one part each, and the (other) doors (*bhadra*) of two parts each of which the projection (*nirgama*) should be one part, and the rest should be discreetly made as before.

386-389. (Again), the breadth and the length should be made of four and six parts (respectively); (then) the wall (*kuḍya*) should be one part, and the remainder the central hall (*nāli-geha*); the surrounding verandah (*alindaka*) should be one part, and the middle door (*madhya-bhadra*) four parts; half of that (i.e., two parts) should be (the dimension of) the side-door (*netra-bhadra*), and half of the latter (i.e., one part) the projection of the door (*bhadra-nirgama*).

390-391. The length being eight parts, the door (*bhadra*) in the middle should be six parts; the rest is said to be as before; the best architect should thus make this (type of gatehouse).

392-393. The breadth and the length being divided into five and six parts (respectively), the side-door (*netra-bhadra*) should be two parts, and the remaining parts should be distributed as before.

394-396. There being five parts in the width and seven in the length, the breadth of the middle door (*madhya-bhadra*) should be five parts, and its projection (*nirgama*) one part; and (the measures) of other (members) should be made as before.

396-398. (Again), the length being one part more, the breadth of the door (*bhadra*) should be six parts, and its projection (*nirgama*) one part, and the rest is directed to be made as before.

398-400. (Again), the length being divided into parts more than (by one-half ot that i.e., into twelve parts), the breadth of the door

(*bhadra*) should be five parts, and its projection (*nirgama*) one part, and the rest should be made as before.

400-401. Again, the length being divided into ten parts, the middle door (*madhya-bhadra*) should be six parts, and the (measure of the) rest should be as before.

402-405. Again, the breadth and the length being divided into six and seven (lit. one more) parts (respectively), the thickness of the wall should be one part, and the rest should be the central hall (*geha*) around (the wall); the surrounding verandah (*alinda*) should be one part, and the middle door (*madhya-bhadra*) five parts; the side-door (*netra-bhadra*) should be four parts, and the projection (*nirgama*) of the portico one part.

406. The length being one part more, the middle door (*madhya-bhadra*) should be of six parts.

407. (The length being) one part more than that, the (middle) door (*bhadra*) is said to be of five parts.

408. Of the ten parts of the length, the breadth of the (middle) door (*bhadra*) should be six parts.

409. Of the eleven parts of the length, the breadth of the door (*bhadra*) should be seven parts.

410. Again, of the twelve parts of the length, the middle door (*madhya-bhadra*) should be given eight parts.

411. The projection (*nirgama*) should be one part, and the rest should be made as before (in all the above instances).

412. This should be the *Dvāra-śobhā* (type of gatehouses) which is known to be single storeyed.

413-414. The breadth being five parts, the length should be one part more (i.e., six parts); the central hall (*nāla-geha*) should be three by four parts, and the remainder the thickness of the wall.

415. Beyond that (wall) by one part around should be made the width of the pinnacle-turret (*kūṭa-koshṭha*).

416. The side tower (*karṇa-kūṭa*) should be of one part, and the width of the chain (*hāra*) (connecting the attic hall) one part.

417. Thereat (i.e., in its proper place) should be made symmetrically the central attic hall (*madhya-koshṭha*) of three parts.

418. The elevation and the arrangement of the two foreheads (*lalāṭa*) are stated to be identical.

419. There should be two side towers (*karṇa-kūṭa*) which are said to be made of two parts (each).

420. The expert (architect) should make two corridors (*antarāla*) of two parts (each).

421-422. The central hall (*madhya-koshṭha*) should be of four parts, and the projection (*nirgama*) of two parts, one-and-a-half parts, or one-and-one-fourth parts.

423. Thus is described the central hall (*madhya-koshṭha*), and there should be two portholes (*netra*, eye) along the length.

424. There should be a fourth central hall (*madhya-koshṭha*), and four corner towers (*karṇa-kūṭa*).

425. The region of the corridor (*antarāla*) between two chains (*hārā*) should be decorated with arches (*toraṇa*), etc.

426. Again, the length being one part more, the thickness of the wall should be as before.

427. The breadth of the middle and the top doors (*bhadra*) should be three parts (in each case).

428. The projection (*nirgama*) at the region of the forehead (*lalāṭa*) should be of one part as before.

429-431. (Again), the length being one part more and the breadth as before, the middle door (*madhya-bhadra*) should be of four parts, and the corridor between the two chains (*hārāntara*) of two parts; the central hall (*madhya-koshṭha*) should be four parts, and the rest should be made as before.

432. The length being nine parts, the central hall (*madhya-koshṭha*) should be of five parts.

433-436. As an alternative, the length should be made of four parts; the central hall (*madhya-koshṭha*) should be of six parts, and the middle door (*madhya-bhadra*) of two parts; a half of that (i.e., one part)

is said to be (the measure of) the projection (*nirgama*), and the corridor (*antarāla*) of two parts; (and) the rest is directed to be made as before.

437-438. As an alternative, the breadth being six parts and the length in particular seven parts, the breadth of the surrounding wall should be one part, and the remainder the central hall (*nālikā*, for *nāligriha*).

439. Beyond that one part around should be the measure of the upper portion of the corner tower (*karṇa-kūṭa*).

440. The central hall (*madhya-koshṭha*) should be of two parts, and the corridor (*antarālaka*) of three parts.

441. Along the (same) length the middle door (*madhya-bhadra*) should be of three parts, and the chain (*hārā*) of two parts.

442. Again, the length being eight parts, the central hall (*madhya-koshṭha*) should be of four parts.

443. Again, the length being nine parts, the length of the central hall (*koshṭha*, for *madhya-koshṭha*) should be of five parts.

444. Its middle door (*bhadra*) should be of three parts and the projection (*nirgama*) of one part.

445. Again, the length of ten parts should be distributed as before.

446. Again, (the length) being made eleven parts, the central hall (*madhya-koshṭha*) should be of five parts.

447. Again, the length being twelve parts, the length of the central hall (*śālā*, for *madhya-śālā*) should be of six parts.

448. The door (*bhadra*) should be made of two parts in the middle, and the projection (*nirgama*) of one part.

449-450. The width of the ante-chamber (*anuśālā*) should be extended to the middle of the chain (*hārā*); at the two sides the chain (*hārā*) should be furnished with the vestibules (*nāsikā*), and the cage-like windows (*pañjara*).

451. The rest should be made as before, and be discreetly constructed in the same (i.e., their proper) places.

452-454. Again, the breadth being seven parts, and the length eight parts, the thickness of the wall should be one part, and the remainder the surrounding corridor (*antarāla*); and the rest should be made, as stated by the expert (architects), of the (one) part surrounding the outside of that (corrider).

455-457. The length as before should be made nine, ten, eleven, twelve, or thirteen parts, of which the central hall (*madhya-śālā*) should be made of (sufficient) width.

458-459. Again, of the fourteen parts of the length, the corridor (*antarāla*) should be of three parts, the central hall (*madhya-koshṭha*) of eight parts, and the rest should be made as before.

460-462. Again, the breadth being eight parts, and the length nine parts, the thickness of the wall should be two parts, and the remainder is meant for the central hall (*nāli-griha*); beyond that (central hall) one part around should be the (measurement of) the corner tower (*karṇa-kūṭa*), etc.

463-465. Again, the length may be made ten, eleven, twelve, thirteen, fourteen, or fifteen parts.

466. (In all these instances) the central hall (*madhya-koshṭha*) should be of five parts, and equal to that the corridor (*antarālaka*).

467. Inside that (corridor) with three parts, especially, should be constructed the antechamber (*anuśālā*).

468. The projection (*nirgama*) of the central hall (*madhya-koshṭha*) should be one part, or one-and a-half parts.

469–470. Of the sixteen parts of the length, the central hall (*madhya-koshṭha*) should be of six parts, and the rest are directed to be made as before.

471–473. As an alternative, the expert (architect) should make the breadth nine parts and the length ten parts; the thickness of the wall should be one part, and beyond that there should be one part around, with which should be especially made the measurement of the pinnacle tower (*kūṭa-śālā*), etc.

474-480. Again, the length being one part more (i.e., eleven), twelve, thirteen, fourteen, fifteen, sixteen, or seventeen parts which should be distributed as before (in all these instances), the central hall (*madhya-koshṭha*) should be of nine parts; in its middle the middle door (*madhya-bhadra*) should be of five parts in breadth, and the projection (*nirgama*) one part; the corridor (*antarāla*) should be of four parts, and in its middle the door (*bhadra*) of two parts.

481-482. Again, the length should be made eighteen parts; (of these) the central hall (*madhya-koshṭha*) should be of ten parts, and middle door (*madhya-bhadra*) of six parts.

483. The expert (architect) should make the wall solid (*ghana*) or hollow (*aghana*).

484. The upper portion should be specially decorated with the corner tower (*karṇa-harmya*), etc.

485-486. In its own place in the interior, the water place (lit. reservoir, gutter) should be made of one part; by the outside (of the gutter) should be continued the (upper portion of the) wall.

487. The enclosure (*veśana*, band) and the projection (*nirgama*) may, otherwise, be measured in rod (*daṇḍa*).

488. The wise (architect) should thus construct the second storey in the *Dvāra-śālā* (type) of those (gatehouses)

489. The arrangement and features of the third storey (of the *Dvāra-prāsāda* (type of gatehouses) will be described now.

490-491. The length is said by the leading architects to begin from seven parts, and be increased by one to fourteen parts.

492. The thickness of the wall around should be two parts, and the remainder for the central hall (*geha*, for *madhya-geha*).

493. Beyond that (central hall) in the surrounding part a division should be made from the watery to the dry (lit. land) part.

494. Beyond that (gutter) with one part around should be made the corner tower (*karṇa-harmya*), etc.

495. Beyond that a reservoir of water should be made of one part surrounding the top of that (corner tower).

496. Beyond that (reservoir) should be made the pinnacle tower, (*kūṭa-śālā*), etc., equal in measure to that.

497-498. There are stated to be made eight central halls (*madhya-śālā*), eight corner towers (*karṇa-kūṭa*), and sixteen chains (*hārā*) ; and the rest should be made as before.

499-500. The breadth should be eight parts, and the length should be increased as before according to the above-mentioned rules (proportion) to sixteen parts.

501-502. And if the breadth begins from nine parts, the length is said to end at eighteen, the arrangement (i.e., increment) being as before.

503. The width should begin from ten parts and end at twenty-two parts.

504. The extension of the length is stated to be from nine or ten parts to twenty-one parts.

505. But the division into nineteen parts is preferred for the fourth storey (in the *Dvāra-harmya* type of gatehouses) which should be furnished with three-fold (upper) ornaments.[1]

506-508. The width of the central hall (*madhya-koshṭha*) should be six, seven, eight, nine and a-half, eleven and a-half, twelve, or thirteen parts; the remainder the corridor (*antarāla*) and the corner tower (*karṇa-kūṭa*) of two parts.

509. The central hall (*madhya-śālā*) should specially be five, six or seven parts.

510-511. The door (*bhadra*) in the middle of the (central) hall (*śālā*) should be two or three parts ; the projection (*nirgama*) should be one, two, or three parts.

512. As an alternative, there should be, for the chain (*hāra*), one, two, three, or four parts.

513. In the middle of that (chain) should be the antechambers (*anuśālā*), and the projection (*nirgama*) should be one part.

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[1] Possibly the spherical roof (*śikhara*), dome (*stūpi*), and spire (*śikhā*) compare line 53.

514. With the remainder should be made the vestibule (*nāsikā*) and the cage-like window (*panjara*) of the corridors (*antarālā*).

515. The corridor (*antarāla*) of the ground floor (lit. first or bottom storey) should be furnished (lit. storeyed) with a vaulted ceiling (lit. pitcher-shaped, *kumbha*).

516. It (this type of gatehouses) should be decorated with the corner tower (*karṇa-harmya*), etc., and may be with or without a door (*bhadra*).

517. The chain (*hārā*) and the corner tower (*karṇa-kūṭa*) should extend to the crowning fillet or the apex (*śikhānta*).

518–520. An opening hall (*bhadra-śālā*) should be specially made in front of (lit. inside) the hall (*śālā*) of the middle compartment (*madhya-koshṭha*) ; or there may be made the side halls (*paksha-śalā*) or a top hall (*ūrdhva-śālā*) ; otherwise, there may be built something like a nest, or half-halls (*ardha-śālā*).

521–522. The height of the halls (*śālā*) in the middle compartment (*madhya-koshṭha*) should extend to the crowning fillet (*uttara*), the corona (*kapota*), or the face-moulding (*pratika*).

523–524. On the forehead part (of the central hall) should be constructed a front room (*bhadra-koshṭha*) or a dwelling room (*vāsa-koshṭha*) of ten parts ; and the rest should be constructed according to one's discretion : thus is described the fourth storey.

525–526. (In the fifth storey, i.e., in the *Mahāgopura* type of gatehouses) the length should begin as before from nine parts and end as before at twice that (i.e., eighteen parts).

527–528. The measurement (i.e., thickness) of the wall should be four, five, six, seven, or eight parts, and the remainder the central hall (*nālikā*, i.e., the *nāla* or *garbha-geha*).

529–530. The outer side of the wall should be extended by one part around to eight parts (which should be) distributed (lit., measured) as before.

531. The arrangement of the corner tower (*karṇa-harmya*), etc., should end at the four-fold (upper) ornaments[1].

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[1] Possibly the spherical roof (*śikhara*), dome (*stūpi*), spire (*śikhā*), and finial (*śikhānta*); compare line 505, and the writer's *dictionary*, page 192.

532. The width of the central hall (*madhya-koshṭha*) should be made as before.

533. The remainder should be the corridor (*antarāla*) (where on) the wise (architect) should construct the pinnacles (*kūṭa*).

534. Those of which the measurement is not specified here should be made as in the case of the fourth storey.

535. The ornaments of the projection (*nirgama*) and of the door (*praveśa*, entry, entrance) are described now.

536. The breadth of the fascia (*prati*) should be divided into eight parts.

537. A half of that (fascia) surrounding the outside should be (the measure of) the platform (*vedi*) (which is made) at the end of (i.e., over) the wall (*sālā*).

538. The width of the platform (*vedi*) should be four parts, and the breadth of its neck (*grīva*) three parts.

539. The width of the head (*śiras*) should be same as of the platform (i.e., four parts), and the rest should be like those of the main edifice (*prāsāda*).

540–542. The large vestibules (*mahānāsi*) should be made on the two foreheads (*lalāṭa*), and between those two should be made the middle vestibule (*madhya-nāsi*); the vestibule (*nāsikā*) of the hall should be shaped like the nose (*nāsikā*); the small vestibules (*kshudra-nāsi*) should be made in the regions of other corridors.

543. The width of the large (lit. eye, *netra*) vestibule should be (equal to) six parts.

544–545. The width of the middle vestibule (*madhya-nāsi*) should be two parts out of three, three parts out of five, or three parts out of four (of the large vestibule).

546–547. The width of the small vestibule (*kshudra-nāsi*) should be one part out of three, two parts out of four, or two parts out of five (of the middle vestibule).

548. Its height should be equal to the width, or greater or less by one-fourth.

549-551. The height up to the top (*mauli*) of the large vestibule (*mahā-nāsi*) should extend up to the forepart of the dome (*stūpi*); the height up to the top of the middle vestibule (*madhya-nāsi*) should end likewise by the forepart of the abacus (*phalakā*); and the height of the small vestibule (*kshudra-nāsi*) should be discreetly ascertained by the best architect.

552-553. The group of four small vestibules should be in conformity with the hall (*śālā*), spire (*śikhā*), and perfectly circular domes, and be attached to the neck-pinnacle (*gala-kūṭa*): this is called the *Śrībhoga*.

554. Where there is a group of eight small vestibules, it is called the *Jaya*.

555. When there is a group of twelve small vestibules, it is similarly called the *Śrīviśālā*.

556. With sixteen small vestibules, it is called here the *Vishṇu-kānta*.

557. When there is a group of twenty small vestibules, it is called the *Indra-kānta*.

558. When there is no small vestibules, it is known as the *Brahma-kānta*.

559. If it is constructed without the neck-pinnacle (*gala-kūṭa*), it is distinguished as the *Skandha-kānta*.

560-561. The middle vestibule should be made higher up whereat the vestibule should be furnished with the cage-like windows (*pañjara*); thus is described the *Śrīkara*.

562-563. Where the vestibules are consolidated with *kankar* (gravel), and the central hall (*śālā-koshṭha*) in particular is made ending at the dome (*stūpika*), and when it is made with the front hall (*bhadra-śālā*), it is called the *Saumya-kānta*.

564. These are the nine kinds (of spherical roofs)[1]: they should be made on the heads of all gatehouses.

[1] There are actually nine varieties, not ten (see lines 554–563).

565-566. All these (top portions) should be constructed beyond the pillar (*pāda*) in all the hollow (*aghana*) type of gatehouses especially over their upper floors (*tala*).

567. If the reverse of what is not mentioned be accepted, only what should not be accepted would suffer.

(The features of the windows.)

568. The features of the windows will now be stated according to the rules

569-570. In all kinds of buildings, such as the temple (*maṇḍapa*), etc., there should be room for windows which should be opened as directed (below).

571. Those (windows) of the gods (i.e., temples) are desired by the wise (architect) also for the human (civil) buildings.

572. The latticed windows (*jālaka*) of the human (residential) buildings are suited to the temples as well.

573. All the breadth and height of those (windows), as prescribed by the ancient (authorities), should be followed.

574. They (the windows) should be furnished with pillars (*pāda*) and leaves (lit. edge, *pālikā*); and decorated with leaves and flowers.

575. The screen (*jālaka*) of the gods (i.e., temples) should be furnished with holes in the middle.

576-577. In the windows (screen) of the Brahmans and the kings, the middle pillar should be left out, but they should be furnished with middle style (*paṭṭikā*) by the expert architects.

578-579. In case of (the windows in the buildings of) the Vaiśyas and the Śūdras, the middle pillar should be retained, (and) there should be no style (*paṭṭikā*) in the middle, but it would be auspicious to make a platform (*mañcha*) (instead).

580-581. They must not be constructed without the features mentioned above; if they be whimsically constructed, it would cause the loss of wealth and fame (? *śravā*), there is no doubt about it.

582-585. The *nāga-bandha* (binding or band of snake), the *valli-bandha* (leaf-band), the *gavāksha* (cow's eye), the *kuñjarāksha* (elephant's eye), and resembling the *svastika*, the *sarvatobhadra*, and the

nandyāvarta shapes, and the *pushpa-bandha* (flower-band) painted beautifully all over and ornamented with jewels: these are the shapes of the windows; (of which) the *nāga* and the *vallī* (first two types) should be employed in temples (in particular).

586-587. Within the (area of the) above mentioned breadth and length there should be eighty-one (squares) plots [1]; and with eleven plots the snake figure should be marked once, twice, (or) thrice.

588. The wise (architect) should, otherwise, make the window by dividing (the same area) into sixty-four parts.

589. (Again), it (the same area) being divided into forty-nine (square) plots, the leaf and creeper should be furnished (i.e., figured).

590. Again, for the other windows plots should be marked with any of even or odd number.[2]

591-592. The leaves (*paṭṭikā*) on either side of the pillar should be made of one, two, three, four, or five parts (*mātras*) (in length), and all their breadth and thickness should be made (according to his discretion) by the best architect.

593-594. The windows should be fittingly opened for the gatehouses at their pinnacle-tower, neck between their pillars, and at the solid (*ghana*) and the hollow (*aghana*) portions.

595-596. In all other kinds of buildings too, windows should be opened in proper places as stated before, as it furnishes beauty, comfort, and convenience (lit. giver of prosperity).

597-598. According to some (authorities) the three varieties of width (for windows) should begin from one-and-a-half cubits, and be increased by six *aṅgulas* (i.e., quarter of a cubit) to five cubits.

599-600. For the five types of gatehouses, namely, the *Dvāra-śobhā*, and others, there should be fifteen varieties of dimensions (*pramāṇa*), and the height is always stated to be twice (the width).

Thus in the *Mānasāra*, the science of architecture, the thirt third chapter, entitled:

The description of the gatehouses (and the windows).

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[1] See chapter VII.

[2] Thirty-two plans comprising one to one thousand and twenty-four plots have been stated in chapter VII.

CHAPTER XXXIV

THE PAVILIONS

1-2. The characteristic features of all (kinds of) pavilions which are fit for the dwelling of the gods, the twice born, and the other (inferior) castes will be described now.

3-4. The elevation (lit. the relative or divisional measurement) the thickness of the walls, the verandahs, and the sheds with yards (*prapā*), and the shapes of pavilions: these five features (of pavilions) are described in order.

5-6. The fifteen varieties of width (i.e.. thickness) of the wall (*bhitti*) should begin from one and a-half cubits and end at five cubits, the increment being by six *aṅgulas* (i.e., a quarter cubit).

7-9. The height should be equal to the breadth or greater by one, that is, twice the breadth, the increment being by one *aṅgula* (i.e , part); (otherwise), (it the height of the wall) should be increased to twice the breadth, the increment being by one-eighth of the breadth.

10-12. Thus is stated the dimension (i.e., height of the wall) in proportional measure; the breadth of the wall in proportional measure is described here: the five varieties (i.e., proportions) of the breadth of the wall are stated to begin from one cubit (i.e., one part) and end at two cubits (i.e., twice), the increment being by six *aṅgulas* (i.e., a quarter)[1]

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[1] As stated in line 3, one of the five main items is the dimension of the wall, which consists in its thickness, height, and length. The thickness is specified in the fifteen varities given under lines 5-6; the height is given under lines 7-9 in proportion to what is called breadth, really length, of the walls lengthwise and breadthwise of the pavilion. But the measures apparently specified under lines 11-12 would be too small even for the length of the smaller side-walls. This confusion may be due to the loss of a line of which, however, there is no indication in any of the texts

13. The breadth of the verandah (*alinda*) should be one or two parts (i.e. equal to or twice the thickness of the wall).

14-15. The sheds with yards (*prapāṅga*) should be made without a base (*adhishṭhāna*), but it should be furnished, instead, with a wooden (lit. bamboo) pillar (*pāda-vaṁsa*) between the plinth and the entablature.

16-18. The timber of which the pillars are made should consist of *khadira* (acacia catechu), *khādira* (a tree of acacia catechu class) *pūti pādapa* (pine tree), other strong trees, *hema-padāpa* (i.e., *hema-pushpaka*) *kshīriṇī* (milk tree), and other tall trees of best species.

19. As an alternative, all the component members including the pillar of the shed may be (partly) made of stone.

20. It may be built of one, two, or three materials as would make it fittingly beautiful and strong.

21-22. The wise architect should prepare the (wood) and make the pillar with whatever trees may be available, such as the bamboo-cane (*vaṁśa*), the tree with essence, or the betel-nut tree (*kramuka*).

23-24. The upper beam (or rafter, *vaṁśa*) should be made of the betel-nut tree (*kramuka*) or with the reed (*veṇu*) mixed with the bamboo-cane (*vaṁśa*), and when made with a (long) bamboo-cane it should be long and straight.

25-26. The roof (*āchchhādana*) (of the shed) should be made by spreading the coir of cocoanut or with some other coirs, whatever may be available.

27. The surrounding shed (*prapā*) should be made (sufficiently strong) so that it may not be moved (i.e., blown away) by the wind.

28. (The architect) who is expert in building them should construct the sheds (*prapā*) and the yards.

29-30. The sheds (*prapā*) should be constructed round the interior or exterior of the temples, dwelling houses, pavilions, or any other buildings.

31. There would be no defect if the sheds (*prapā*) be constructed in any other (convenient) quarters.

32. Thus is described the shed with yard; the (types of) pavilions will be described now.

33. In front of all kinds of temples there should be (built) many pavilions.

34-36. Pavilions should be built in holy places, in pleasure gardens, in the centre of villages and such other architectural objects (e.g. towns), on the four main and intermediate quarters, within or outside (the compound); in the compound of the human dwellings, or in front of them.

37-43. Pavilions should be built for residential purposes of all, and for the purpose of sacrifice; for the coronation of kings, and for dancing (or musical performance); for carrying out the ceremonies connected with wedding, so also with the making of friendship; for putting on sacred thread, and for bathing; for looking at the face of the newly-born baby, and for the self-immolation of a faithful wife (*satī*, on the death of her beloved husband)[1]; for shaving, and for cooking with fire; and also for enjoying one-self: for all these purposes pavilions should be constructed in order according to rules.

44. The places (i.e., situation) of all kinds of pavilions have been stated by the ancients (as given below).

45-50. In front of an edifice (*prāsāda*) seven pavilions should be built in order: the first one should be for bathing, the second for reading (i.e., study or library); the third for the special bath-room; the fourth is for the image (chapel), the fifth is for installation (*sthāpana*, of some deity); then the sixth should be constructed as the place for pilgrimage (*tīrtha*), and the seventh for the performance of dancing and singing.

51-52. As an alternative, in front of that (the edifice) there may be built one, two, and three pavilions for bathing, for the installation of images (of deities), and for singing and dancing.

[1] A kind of pavilion where certain ceremonies used to be performed in connexion with the obsolete practice of burning alive a devoted wife with her dead husband.

53. If there be two (lit., a second) pavilions the first one should be in front of the second.

54. In the first place there should be a pavilion for reading, so also (i.e., secondly) for the image (deity).

55. In the same (first) place, the wise (architect) should (preferably) build a pavilion for the image (i.e., deity).

56–57. Three, four, five, six, seven, eight, and nine walls should be constructed from the first to the seventh (pavilions), each wall being between two pavilions.

58. From that (number, i.e., three), it (the number of walls) may be increased to eleven, the increment being by one.

59. Each one of the seven types of pavilions should be of five kinds.

60. Similarly they should have four corners (i.e., sides), the increment being by one.

61. Their length (and breadth) should be equal, or the length may be greater than the breadth, preferably equal.

62. If there be two walls the column in between should be omitted.

63. There (in each pavilion) should be three-fold members, (namely), the base, the pillar, and the entablature.

64. Above that (entablature, i.e., the roof) over the pavilions should be made the pinnacle[1] (*chūlikā*) and corner tower (*karṇa-harmya*).

65. The corridors (*antara*, lit., interspace) should be made of stone, and nicely ornamented.

66. The base (of the pavilion) should be furnished with a pedestal, or simply a plinth (*masūraka*) should be made.

67. If the edifice be furnished with a pedestal, the pavilion also should have a pedestal.

68. If the edifice have a thick pedestal, the pavilion should have the three-fold members (namely, the base, the pillar, and the entablature).

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[1] According to the *Kāmikāgama*, *stūpikā*, *ghaṭa*, *kīla*, *śulaka*, *stūpi*, *śikhā* are synonyms of *chūlikā* (see the writer's *Dictionary*, page 197, also page 198).

69. If it (the pavilion) be not symmetrical to the edifice, the death of the master is certain.

70–72. Wherever it may be, the entablatures should be ornamented like the edifice; they should be (always) ornamented like the edifice, or they may be more luxuriously ornamented; the exterior should be decorated in the same way as the interior, this is desired to refer to the pavilion (only).

73. The rules of their arrangement will now be described in order.

74. It (the first pavilion) should be four-cornered (i.e., four-sided) of uniform shape[1], and the dimensions (i.e., both breadth and length) should be of equal measure of three parts (i.e., three parts square).

75. It should be furnished with sixteen columns and four doors[2].

76. Porticos (*bhadra*) should be spread on all the four directions, and the projection (*nirgama*) should be made of one part.

77. It should be a four parts square (lit. of four-parts dimensions) and furnished with sixteen pillars.

78. Four doors should be opened on the four sides and the porticos (*bhadra*) made of one part.

79. There should be made thirty-two small vestibules (*kshudra-nāsi*) as component parts (lit. limbs), and the rest should be made as stated by the ancients (lit., before).

80. It (the second type of pavilion) should be a six-parts square (lit., of four-coners, i.e., four-sided of six parts each), and should be furnished with thirty-six pillars

81. There should be four doors on four sides, but the middle (row of) pillars should be omitted.

[1] According to the *Matsya purāṇa* (chapter 270, verse 16) pavilions may be three-cornered, four-cornered, eight-cornered, sixteen-cornered, crescent-shaped, and circular (see the writers *Dictionary*, page 472).

[2] See line 240 where one hundred to one thousand pillared pavilion is described. In the *Matsya-purāṇa* (chapter 270, 1—15) pavilions are divided into twenty-seven types bearing technical names according to the number of columns varying in decreasing order as 64, 62, 60, 58 and so on. (See further details in the writer's *Dictionary*, pages 471-472.)

82. The breadth of the wall should be two parts, and the projection (*nirgama*) one part.

83. There should be thirty-two small vestibules (*kshudra-nāsi*) as component parts (lit., limbs), and it should be decorated with all ornaments.

84. It (the third type of pavilions) should be a seven parts square (lit., seven-and-seven parts dimensions, i.e., both breadth and length seven parts), and furnished with sixty-four pillars.

85. Four parts should be left out in the centre, and four doors should be made on the four sides.

86. The breadth of the porticos (*bhadra*) should be three parts, and the projection (*nirgama*) should be made one part.

87. As an alternative, it (this type) may be furnished with sixty pillars, and from the centre should be (erected) the upper pinnacle (*ūrdhva-kūṭaka*).

88. There should be thirty-four small vestibules (*nāsi*) as the component parts, and the rest should be made as before.

89. Again (i.e., in the fourth type) there should be four dimensions (i.e., sides) of eight-parts each (i.e., a eight-parts square), and it should be furnished with sixty-four pillars.

90. Four doors should be opened on the four sides, but the middle pillars should be omitted.

91. The porticos (*bhadra*) should be made of four parts, and the projection (*nirgama*) of one part.

92. The small vestibules (*kshudra-nāsi*) as component limbs should be, as before, symmetrically constructed in the same places.

93. Again (i.e., in the fifth type) the equal breadth and length should be nine parts each (i.e., it should be a nine parts square).

94. It should be built as an open hall (*nava-raṅga*)[1], and thirty six pillars (out of sixty-four) should be left out.

95. Again (i.e. in the sixth type) the dimensions should be of nine by eight parts, and the porticos (*bhadra*) should be made of three by one part.

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[1] For details, see the writer's *Dictionary*, pages 298, 299.

96. On the four sides should be opened four doors with porticos (*bhadraka*) in front.

97-98. It should be decorated with all ornaments; there should be forty-eight large or small (*alpa*) vestibules, and an upper pinnacle in the centre.

99. Of the same (number of pillars, i.e., sixty-four) the sixteen pillars at the four corners (*karṇa*) should be left out.

100. There should be four doors on the four sides, and porticos (*bhadarka*) of four by one part.

101. It should be decorated with all ornaments, and the rest should be made according to one's discretion.

102. The (seventh type of) pavilion should be an eleven parts square (lit., four-cornered).

103. It should be an open hall (*nava-raṅga*) furnished with verandahs (*alinda*), and one hundred and eight pillars.

104. The surrounding verandahs should be made of one part on the outside.

105. On the four sides the porticos (*bhadra*) should be made of five parts (each), and the projection (*nirgama*) of one part.

106. Four doors should be opened on the four sides, and there should be sixty-four small vestibules (*alpa*, i.e., *kshudra-nāsikā*).

107. It should be furnished with nine pinnacles (*kūṭa*) at the top, and decorated with all ornaments.

108-109. Similarly it (the eighth type) should be four-cornered (i.e., a rectangle); its dimensions are stated here: the breadth should be made of three parts and the length of six parts.

110. The doors should be opened at the back and front (lit., bottom and top); but they should not be constructed on the sides.

111. As an alternative, the entrance (door) should be made at (the either side of) the middle of the length off a part (i.e., measure) more or less.

112. The surrounding verandahs (*alindaka*) should be made of one part, and the rest should be made as stated above.

113. Again (in the ninth type) if the breadth be four parts, the length should be eight parts.

114. In the interior of it there should be (another) pavilion of two by six parts as its breadth and length.

115. The surrounding verandah is desired to be made on the outside with one part around.

116. The doors should be as many as necessary, and the rest should be made as said before.

117. Again (in the tenth type) the breadth should be five parts and the length ten parts.

118. Inside that (area) a (minor) pavilion of three parts by eight parts as breadth and length should be constructed.

119. On the outside, the surrounding door (? verandah) should be made of one part.

120. The rest should be made as before, and it should be decorated with all ornaments.

121. Again (in the eleventh type) the breadth should be six parts, and twice that the length.

122. The central theatre (or open hall, *madhya-raṅga*)[1] should be of two parts, and the surrounding pavilion of two parts around.

123. The rest should be made as before, and it should be decorated with all ornaments.

124. Again (i.e., in the twelfth type) the breadth should be eight parts and the length sixteen parts.

125. Inside that (area) a pavilion should be made of four by twelve parts.

126. The verandah should be made of two parts around, and the rest should be made as before.

127. Again (i.e., in the thirteenth type) the breadth should be nine parts and the length eighteen parts.

128. The central theatre (*madhaya-raṅga*) should be made of three by twelve parts.

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[1] See chapter XLVII; compare lines 128, 94, 103 (*nava-raṅga*), and the writer's *Dictionary*, pages 494-495.

129. On the outside the verandah should be made of one part, and the surrounding pavilion of two parts.

130. As an alternative, the (surrounding) verandahs may be made of one part (both) at the inside and the outside.

131. There should be made four dwelling-houses on the four corners (*karṇa*) with walls spreading on the desired directions

132. The doors should be made as before, and it should be decorated with all kinds of ornaments.

133. Again (i.e., in the fourteenth type) the breadth should be ten parts and the length twenty parts.

134-135. The surrounding verandah should be made of one part; and in the centre with length as twice the breadth, that is, with three parts as breadth and twice of that as length, a pavilion should be made.

136. Beyond that, the surrounding verandah should be made of one part.

137-138. In the interior another pavilion-like structure should be made with breadth of two parts and the length of twelve parts, and the rest should be made as before.

139. Again (i.e., in the fifteenth type) the breadth should be eleven parts, and the length twice the breadth (i.e., twenty-two parts).

140-141. Within that (area) with the breadth of three parts and the length of fourteen parts a pavilion should be made, and beyond that every thing else should be made as before..

142. Again (i.e., in the sixteenth type) the breadth should be eleven parts, and the length twice the breadth.

143. Suitably within that (area) should be made the yard (*aṅgana*) with five parts as width.

144. A pavilion should be made of one part around, and the surrounding verandah should be made of two parts.

145. Again (i.e., in the seventeenth type,) the breadth should be seven parts, and the length round the corner eighteen parts.

146. Beyond that (area), a pavilion should be made of two parts around

147. In the same way there may be two or three (more) pavilions with their length increased by one part as before.

148. Each one of the hall (*sabhā*), the pinnacle (*kūṭa*), and the pavilion (*maṇḍapa*) should be made of five parts.

149. Therein, may, otherwise, be built something like the pavilion (only) if that suits (better).

150. Four doors should be made on the four sides decorated with porticos (*bhadra*).

151. Thus are described the pavilions ; their (various) names will be stated below.

152-155. The first is (called) the *Himaja*, the next (i.e., the second) should be the *Nishadaja* ; the third is (called) the *Vindhyaja*, the fourth the *Mālyaja* ; the fifth is (called) the *Pāriyātra*, the sixth the *Gandha-mādana* ; and the seventh should be the *Hema-kūṭa* : these are the seven names of the pavilion.[1]

156. All these should be constructed in front of the edifice ; all other (features of these) will be described here (below).

157-160. (When) it is a rectangle of eleven by four parts, the surrounding verandah (*vāra*) should be of one part and there should be four doors on the four sides, and the porticos (*bhadra*) should be of one part, and it should be decorated with all ornaments : such a pavilion is called the *Meruja* ; it is utilized as a library (lit., a place for collection of books).

161-162. (When) it is a rectangle of two by four parts and its porticos (*bhadra*) are surrounded by a verandah, it is called the *Vijaya* ; and it is used as the wedding pavilion (lit., the place where the wedding ceremonies are performed).

163-164. The pavilion named *Vijaya* above, is also constructed there (i.e., in convenient quarters) for the free distribution of drinking water, and is dedicated to a god.

1 All these names are the designations of the seven well-known mountains which, perhaps, these pavilions are intended to resemble.

165. It should be a three part square, and furnished with four doors.

166. There should be one hundred and ninety-two (two-eight-twelve) pillars, it is called the *Siddha-yoga* pavilion.

167. It (the pavilion) should be (again) a four parts square, but its middle pillars should be omitted.

168. The courtyard should be constructed in the interior, and a pavilion should be built with one part around.

169. There should be constructed, according to one's desire, one, two, three, or four doors.

170. With one part surrounding the doors a verandah (*vāra*) should be made on the side.

171. The breadth of the projection (*nirgama*) and the portico (*bhadra*) attached thereto should be one and two parts (respectively).

172. In front of it (the pavilion) or on the side should be constructed the staircases.

173. Thus is described the *Padmaka* pavilion; and it is used as the refectory (lit., kitchen) of the gods.

174. The pavilion called the *Sicha* is also used as the kitchen.

175-180. Its breadth should be four parts, and the length five parts; the courtyard in the middle should be two by three parts, and the surrounding pavilion should be of one part; beyond that the surrounding verandah is desired to be made of one part; the breadth of its porticos (*bhadra*) should be three parts, and the projection (*nirgama*) should be made of one part; it should be furnished with windows, and there should be constructed one door; a shed (*prapā*) should be erected in the courtyard: it is called the *Pushpa*, and is used as the flower pavilion (i.e., where flowers are collected for worship).

181-184. (When) it is a square of five parts, the courtyard should be of five parts; beyond that the surrounding pavilion should be made of one part around; the porticos (*bhadra*) should be furnished with windows, and the rest should be as before: this pavilion is called the *Bhadra*; it is used as the water-storing house (lit., house to be filled with water).

185-190. The same (area) with the length one or two parts more, (and) the same (pavilon) with two or three parts breadth and five parts length ; (but) this pavilion should be constructed breadthwise with walls made in some desirable directions ; an entrance door should be opened in the front, and it should be furnished with a syn metrical courtyard ; beyond that the expert (architect) should construct doors with one part surrounding the outside ; this pavilion should be furnished with porticos ; it is suitable as the store-house for grain (i.e., granary).

191-196. (When) its breadth is six parts, the length should be eight parts, and the breadth of the courtyard should be four parts and its length six parts ; beyond that the surrounding pavilion should be made of (one) part around ; the entrance door should be constructed on the left side of the middle (line) of the length ; the pinnacled roof should be in continuation of the pavilion, or a covering (*prachchhādana*) should be constructed (over it) ; this pavilion is called the *Śiva*, it is used as the house where corn is unhusked.

197-204. The breadth should be five or seven parts, and the length two parts more than those parts, the pavilion should be made square or rectangular ; the courtyard inside should be one-third of that, and the pavilion inside one by two parts ; it should be furnished with windows and doors in some convenient directions ; in the middle should be erected a covering (*prachchhādana*) or a shed-yard (*prapāṇga*) ; beyond that a verandah should be constructed with one part surrounding the outside ; and the remaining members (lit., parts) should be constructed with the same measurement as said before ; this is called the *Nṛitta* pavilion : it is fit for (accommodating people to) listening to a musical performance.

205-206. The same with dwelling-houses in convenient quarters is called the *Jālaka ;* this is suitable to be a treasury to keep in clothes, ornaments, religious books, jewels, and other valuables.

207-208. Its breadth should be seven parts and the length desirably proportionate to that ; it should be made a quadrangle with equal or unequal sides : this is called the *Āsthāna* (assembly) pavilion.

209-210. Its length should be twice or thrice the breadth, or it may be a seven parts square, and the middle theatre (or open hall, *madhya-raṅga*) should be a three-parts square.

211. A pavilion should be made around with one or two parts.

212. Pillars should be erected on the back, middle of two sides, and in the front.

213. On the back of the two sides should be doors, or (only) entablature (*prastara*).

214. On the side should be one door furnished with suitable staircases.

215-216. The breadth of the porticos (*bhadra*) and the projection (*nirgama*) on the four sides should be two and one part (respectively); as an alternative the projection should be made for the front porch (*mukha-bhadra*) of two parts.

217. At the front or the side, it should be decorated with staircases.

218. In its centre, as well as inside the theatre (*raṅga*), the shed should be decorated with pearls[1].

219. The altar (lit. seat), etc., covering one part inside that, should be furnished with the (decorative) arch (*toraṇa*) and the ornamental tree (*kalpa-vṛiksha*)[2].

220. Their measurement should be made as said before, and it should be decorated with all ornaments.

221. Inside the pavilion should be made two cars (serving as seat of gods, *vimāna*), of one or two storeys high.[3]

222. In front of the pavilion should be the shed (*prapāṅga*) with a convenient length.

223-224. Inside that (shed) should be built a theatre (*nāṭaka*) with breadth as three parts and length as said before, and a roof should cover the upper most (lit., last) part of the shed (*prapā*).

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[1] Compare the inscription at Tirumalavadi, no. 79, lines 14—23, qouted in the writer's *Dictionary*, page 126.

[2] Compare chapters XLVI, XLVIII; see the writer's *Dictionary*, pp. 125—127.

[3] See the writer's *Dictionary*, page 551, and compare the inscription at Tirumalavadi, no. 79, quoted in the writer's *Dictionary*, p. 126.

225. In the front or at the corner of the shed (*prapā*) the plough-shaped wall (*lāṅgala-bhitti*) should be erected with one by two parts.

226. In front of that the three parts should be the breadth of the portico (*bhadra*), and the projection (*nirgama*) should be one part.

227. As an alternative, staircases should be made at the front and the two sides (of the porticos) with width equal to the breadth of the portico.

228. The rest should be made as before, and it should be decorated with all ornaments: (this is called the *Deva* pavilion).

229. Or the pavilion (thus) called the *Deva* should be (a rectangle) two by three parts as before.

230. Or in this pavilion the shed (*prapā*) in front may be made on the outside.

231. The surrounding verandah is desired to be of one or two parts around.

232. The rest should be made as before, and it should be decorated with all ornaments.

233. As an alternative, the pavilion may be a seven parts square and elephant-shaped.

234. The breadth and length of the central theatre (*madhya-raṅga*) should be three and five parts (respectively).

235. Beyond that the surrounding pavilion should be made of one part around.

236. In front of it should be made a portico (*bhadra*) of two by three parts, and the rest should be as before.

237. As an alternative, the shed (*prapā*) in front of the pavilion should be made on the outside.

238. The surrounding verandah is desired to be one or two parts around.

239. The rest should be made as before, and it should be decorated with all ornaments.

240. This pavilion should be furnished with one hundred to one thousands pillars.

241-242. The assembly hall of the gods and the kings should be discreetly constructed inside that (pavilion) with proportionate length and breadth.

243-244. The one (pavilion) suitable to the kings should be a eight or nine parts square.

245. The aforesaid pavilion may (also) be made for the festival of the gods.

246-247. (Thus) should be the *śālā* pavilion and the *Kṛita* pavilion; the wise (architect) should build the theatre underneath the pinnacle a ten parts square with an inner enclosure of six parts square.

248. It should be furnished with a pinnacle (*kūṭa*) at the top, and the surrounding pavilion should be made of two parts around.

249. The door at the middle should be of two parts, and that in front of twelve (lit., two by six) parts.

250. With two of those (twelve) parts platforms (*vedika*) should be made on the (two) sides of the (front) door.

251. Around that should be made of one part (each) the verandah, the front porch, and the door (to the latter).

252. As an alternative, there may be a side porch (*netra-bhadra*), and the rest should be discreetly made.

253. This is called the *Darbha* pavilion; this is used as the stable for elephants.

254. The breadth should be eleven parts, and the length twenty parts.

255. The surrounding pavilion should be made of one or two parts around that (area).

256. The remainder should be for the inner courtyard, and the doors should be opened towards the desirable directions.

257. The stable for horses should be made of eight by ten parts each.

258. This is called the *Kauśika* pavilion, the remaining parts of which should be discreetly constructed as before.

259. The breadth should be twelve parts, and the length twice the breadth.

260. The courtyard in the middle should be of eight parts, and the surrounding pavilion should be made of two parts around.

261. The doors should be constructed in desirable directions against the desirable walls.

262. This is called the *Kūla-dhāraṇa* ; it is suitable as a cow-shed.

263-264. The breadth should be thirteen parts, and it may be square or rectangular, and the length thereof should be made accordingly proportionate to the breadth.

265. The courtyard inside should be made with width of seven parts.

266-267. The plinth (*masūraka*) should be constructed beyond its surrounding part with length twice the breadth; and the rest should be discreetly made.

268. Beyond that the surrounding pavilion should be made of two parts around.

269. There should be four doors on the four sides, against the walls erected on the desirable directions.

270. A verandah of uniform width should be made of the (one) part surrounding the outside of that.

271. The projection (*nirgama*) and the portico (*bhadra*) should be made of width of five and two parts (respectively).

272. This is called the *Sukhāṅga* (pavilion); this is fit for a guest house (*satra*).

273-274. The breadth should be fourteen parts and the length greater by those parts (i.e., twice): but the length should be fourteen parts on the south or west.

275. Of those (parts) the surrounding verandah should be made of one part, and the pavilion in the middle should be made of three parts.

276. There should be a middle column in all cases, and the doors should be discreetly constructed.

277. In front of it the door should be opened surrounding two parts around, and the remainder should be for the courtyard.

278. Beyond that the surrounding verandah should be made of one part around.

279. This is called the *Saukhyaka* (pavilion), the rest being made as stated before.

280. It should be built on the bank of a river, lake, or sea.

281. This is said to be suitable as a holy place for pilgrimage (of worshippers) of all gods.

282-283. The breadth should be fifteen parts and the length thirty-one parts; or it may be a square; it should be furnished with four doors.

284. In the middle should be a courtyard five by seven parts.

285. Beyond that the verandah should be made of the (one) part surrounding the inside.

286. Beyond that should be the surrounding parlour (*khalūrikā*), and the pavilion made of three parts each.

287. Outside that the verandah should be made of one part around.

288. Beyond that (another) surrounding verandah should be made of one part around.

289. The projection (*nirgama*) and the portico (*bhadra*) should be made of breadth of five and two parts (respectively).

290. Surrounding the outside of the pavilion should be constructed a shed (*prapā*).

291. On the top of the pavilion should be fitted the pinnacle (*kūṭa*), which should be shaped like the garland (*mālikā*)[1].

292. It should be furnished with those (aforesaid) doors and also with windows.

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[1] See line 315 and the note thereunder.

293. There should be one portico at each of the corners consolidated with *kankar*, and they should be constructed in their proper place.

294. It should be decorated with all ornaments; it is called the *Mālikā* pavilion.[2]

295. The middle of its corner (*karṇa*) should be filled with water (reservoir), and the water should be adorned with flowers.

296. Such a pavilion is fit for the spring residence of the gods, the kings (lit., *Kshatriyas*), and others.

297. The breadth should be sixteen parts, and the length thirty-two parts.

298. It should be as before quadrangular, but the middle columns should be omitted.

299. The courtyard in the middle should be of six parts, and the rest should be made as before.

300. Of those sixteen parts (of breadth) the courtyard should be of six parts.

301. The surrounding verandah is desired to be made of one part round the outside of that.

302. Beyond that the pavilion should be made of three parts around.

303. The expert (architect) should make the verandah outside that with one part around.

304. In front of it and at the back and sides should be the surrounding verandah of one part around.

305. At the region of its four corners (*karṇa*) should be made eight porticos (*bhadra*) consolidated with *kankar* (gravel).

306. It should be furnished with the pinnacle (*kūṭa*) at the top, and also with the door porticos (*bhadraka*).

307. It should be furnished with porticos (*bhadraka*) attached to the doors at the entrance, front, and sides.

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[1] Compare line 305.

[2] For further details see note under line 315.

308–309. Of those the two porticos at the corner and the fourth one, as well as the porticos attached along the width of the pavilion should be consolidated with *kankar*.

310. The projection of the porticos consolidated with *kankar* should be one, two, or three parts.

311–312. The breadth of the portico in the middle should be five or six parts, and its projection should be equal to it, or two, three, or four parts.

313. In the front and sides of the porticos (*bhadra*) should be constructed doors of that length (as mentioned before)

314. The pinnacle (*kūṭaka*) should be made over the top of the pavilion, and be made one, two, or three-storey high.

315–316. This is what is called the shape of the garland; the rest should be made as before; it should be decorated with all ornaments; it is called the *Mālyākṛiti* [1].

317. This should be a pavilion for the God of gods, and is fit for the place to see the God in.

318. Thus are stated the pavilions fit for the gods, the Brahmans, and the kings.

319–320. The breadth of all the pavilions mentioned above, should be increased by one part, and the desired length should be ascertained (according to the proportion of one, one-and-one-quarter, one-and-a half, one-and three-quarters, and twice).

321. The breadth should be two parts, and the length greater by one part.

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[1] In the *Suprabhedāgama* (XXX, 123) it is stated that some pavilions should be shaped like *mālā* (garland) and others like *gopura* (gate-house):

केचिद्वै मालिकाकारा केचिद्वै गोपुराकृतिः ॥

In the *Kāmikāgama* there is a chapter (XLI) named, *mālikā-lakshaṇa*. The pavilion is called (XXXV, 6) *mālikā* because it is made like the garland:

ता (शाला) एव मालिकाः प्रोक्ता मालावत् क्रियते यतः ॥

The peculiarity appears to be that a hall should be built inside another:

शालायामपि शालाङ्गा निष्कान्ताननशोभिता ।
ता शाला मालिका ज्ञेया शास्त्रेऽस्मिन् कामिकागमे ॥

For further details see the writer's *Dictionary*, pages 505–506.

322. In the centre there should be a dwelling-house of one part, and the pavilions should be made in front and at the sides.

323. In the house of the Brahmans, it (the pavilion) is stated to be for personal use in performing sacrificial rites.

324. Of the same with twice the length the central theatre (or open hall, *madhya-raṅga*) should be made of two parts.

325. The expert (architect) should make the dwelling-house on its sides with one part.

326. In front of that the verandah should be of one part; as an alternative, the pavilion may be without any dwelling-house.

327. As another alternative, the dwelling-house may be built of one or two parts at the bottom of the rafter (*vaṁśa*).

328. This is fit for the Brahmans; it is called the *Dhanada* (wealth producing) pavilion.

329. The breadth should be three parts, and the length one part more (i. e., four parts).

330. A half of that should be the pavilion, and the high plinth (lit., elevated seat) should be of two parts.

331. The wall (*kuḍya*) should be made at the back and two sides, and the pillars should be erected in the front.

332. In front of it, the projection (*nirgama*) should be of two parts, and the plinth (lit., seat) of three parts.

333. The plough-shaped walls should be erected at the corners (*karṇa*), being surrounded by the verandah on the outside.

334. It should be furnished with pillars of one part, and with porticos (*bhadraka*) on the front and at the sides.

335. This is called the *Dhanādhipa* (lord of wealth) pavilion; it is fit for the gods and Brahmans.

336. The same with a courtyard in the centre is used as the shaving pavilion of the twice-born and the kings.

337—338. The same with length greater by one part, and with walls erected in some desirable directions is suitable for a treasury of jewels belonging to the Kshatriyas (lit., kings) and the Vaishyas.

339. The same with twice that length should have the courtyard in the middle.

340. The dwelling house should be built of one part around, and the walls should be erected in some desirable directions.

341. The (entrance) door should be opened on the left of the middle line across the length.

342. There should be one portico consolidated with *kankar* at the corner (*karṇa*), and the surrounding verandah should be made of one part as before.

343. This is said to be fit for the śūdras; its name is *Dhānyāgāra* (granary).

344. The breadth should be four parts, and the length one part more (i.e., five parts).

345. The pavilion should be constructed of five by two parts.

346. In front of that, the (breadth of the) projection (*nirgama*) should be one part, and the breadth of the portico (*bhadra*) three parts.

347. In front of that or at the two sides, the shed (*prapā*) should be made of one part.

348. The wall (*kuḍya*) should be extended to the end of the portico, and the pavilions should be constructed at the two sides and at the back.

349. This is used as the place of silence for the gods (i.e., the place, silently to meditate on gods); this is called the *Bhūshaṇa* pavilon.

350. The same length should be increased by one, and the breadth should be as before.

351. Of those parts the pavilion should be made of breadth of two parts.

352. The courtyard in the east (? as before) should be made of two by three parts, and the parlour (*khalūraka*) should be made of one part.

353. The expert (architect) should open doors (everywhere) except along the length of the pavilion.

354. This is called the *Bhūshaṇa* pavilion; it is used as the place for the *puṁsavana* ceremony of the Brahmans.[1]

355. The same length should be increased by one part, and the breadth should be as before.

356. The pavilion with breadth and length as three and four (parts) should be made around.

357. This is called the *Subhūshaṇa* pavilion; the rest should be made as said before.

358. This is suitable as the place for the *upanayana* (putting on the sacred thread) and other rites of the three higher castes, consisting of the Brahmans and others (i.e., the Kshatriyas, and the Vaiśyas).

359. The pavilion should be made with breadth of four parts, and the length eight parts.

360. The joints (*sandhi*) at the top and bottom of the bamboo prop (*vaṁśa*) should be made of two by four parts.

361. Between the first and the second dwelling-house one court-yard should be made of two by four parts.

362. One or two small doors on its sides should be made of four parts.

363. The entrance door should be constructed on the left of the middle line across the length.

364-365. As an alternative, at the middle of it (the length) the diameter (i.e., thickness) of the wall being divided, a door of the horse pattern (*kulābha*) should be made, and the rest should be discreetly constructed.

366. This is called (again) the *Bhūshaṇa* pavilion; it is used as the kitchen of the Śūdras.

367. The breadth being of the same number of parts, the length should be twice that (breadth).

368. The door thereof should be made of five by two parts as before.

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[1] This ceremony is performed on a woman's perceiving the first sign of conception, with a view to the birth of a son.

369. There should be one or two dwelling-houses, and the courtyard in the centre should be a three parts square.

370. The (entrance) door should be constructed on the side with one by three parts.

371. Beyond that the surrounding verandah should be made of one part around.

372. The wise (architect) should make the (entrance) door at the middle of the length.

373. The projection (*nirgama*) and the breadth of the portico (*bhadra*) should be made of one and of two by three parts.

374-375. Such a pavilion is called the *Harmya* (edifice); this is said to be used as the kitchen of the gods, the Brahmans, and the kings; this should be furnished with doors of various storeys.[1]

376. The length should be greater than that by two parts, and the breadth should be as before.

377. The courtyard should be made of one part inside that, and the pavilion of two parts around.

378. At the end of that, the parlour (*khalūrikā*) should be made of one part around.

379. The (entrance) door should be constructed on the left of the middle line across the length.

380. The rest should be made as before; such a pavilion is called (again) the *Harmya* (edifice).

381. Such a pavilion is fit as the place of seeing for the first time the newly-born baby of all castes.

382. The breadth should be six parts and the length seven parts.

383. Of these parts, the central theatre-like courtyard (*madhya-raṅga*) should be made of two by three parts.

384. The middle pillars should be omitted, and the pavilion should be made of two parts around.

385. Beyond that the surrounding verandah should be made of one part around.

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[1] Obviously additional gable-windows and skylights are furnished to let out the kitchen smoke and supply extra light.

386. Four doors should be opened on four sides, and the plough-shaped wall should be made at the corner (*karṇa*).

387. Porticos (*bhadra*) of one, two, or three parts should be made on the four sides.

388. This is called the *Śriṅgāra* pavilion; it is used as the bed chamber (lit., place of delightful enjoyment) of the gods.

389. The length should be eight parts, and the breadth as before.

390. Of these parts, the courtyard in the middle should be made of two by four parts.

391. Beyond that the verandah should be made of one part around.

392. Beyond the latter the surrounding pavilion should be made of two parts around.

393. At the four corners (*karṇa*) should be built four dwelling-houses as two parts squares.

394. Beyond that the surrounding verandah (*vāra*) is desired to be of one part around.

395. The (entrance) door should be constructed as before on the left of the middle line across the length.

396. All the eye (shaped openings)[1] between the bottom and top of the rafter (*vaṁśa*) should be consolidated with *kankar*.

397. The breadth of the projection and the portico attached thereto should be one and two parts (respectively).

398. (This is called) the *Sugata* pavilion; it is fit for all castes and in all provinces.

399. The length should be four parts more, and the breadth as before.

400. The breadth of the tower on the forehead (*lalāṭa*)[2] should be two parts and its length six parts.

401. The verandah should be made of one part in the front, at the back, and the sides.

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[1] See line 252.

[2] Compare lines 406, 409, 414, and 499 where the reading is *chāli-harmya* and see the writer's *Dictionary*, pages 198, 509.

402. The dwelling-house should be made at the bottom of the rafter (*vaṁśa*), with two by three parts.

403. All the remaining (members) should be discreetly made as said before in the same places.

404-405. In the front should be built a pavilion, as said before, of four parts square; but according to some the breadth and length should be made of six and eight parts.

406. At the forehead (*lalāṭa*) a tower should be built of two parts in breadth and six parts in length.

407. In front of that the verandah should be made of one part, and the courtyard (inside) of two by three parts.

408. The large (entrance) doors should be constructed at its front the two sides, and at the end (i.e. back).

409. At the forehead should be built a tower with breadth and length of two parts each.

410. This is called the *Prāgata* pavilion; this is comfortable for all purposes (lit., kinds of work).

411. The breadth in order should be seven parts, and the length nine parts.

412. The breadth and the length of the courtyard should be three parts and five parts respectively.

413. Beyond that the pavilion should be made of two parts around.

414. As an alternative, out of those parts (of the area) a tower should be made at the forehead with three parts.

415. In this compound (lit., house) the courtyard in the middle should be discreetly made of two parts.

416. The verandah should be made of one part at the front, and on the two sides.

417. Beyond that the surrounding verandah of the pavilion should be made of one part around.

418. The door should be constructed in the middle of the breadth if it be (a temple) of the gods.

419. The breadth of the projection (*nirgama*) and the portico (*bhadra*) should be two and three parts (respectively).

420. There may be one, two, or three (main) doors.

421. Beyond that (door) the surrounding verandah should be made of one part around.

422. It should be decorated with all ornaments, and furnished with the corner towers (*karṇa-harmya*), etc.

423. This is said to be the *Droṇa* pavilion; it is used as the pleasure pavilion of the gods.

424. As an alternative, it may be used for personal use and for sacrificial purposes of the kings.

425. This may be also used as the place of auspicious rites, such as the *sandhyā* (daily chanting of the Vedic hymn) of the Brahmans.

426. Or this may be the hermitage or the theatre-like gallery (*nāṭaka*) of the ascetics.

427. The length should be greater by one part, and the breadth as before.

428. The courtyard in the middle should be of six by three parts, and the pavilion of two parts around.

429. On the forehead should be two towers as before, and the verandah should be made of one part.

430. This should be (specially) made for the king's palace, and used as the wrestling pavilion

431. The length should be greater than the former by two parts, and the breadth seven parts.

432. The courtyard inside that should be of five by eleven parts.

433. Beyond that the surrounding platform (*vedikā*) should be made of one part around.

434. This is (also) called the *Droṇa* pavilion; it is used as the place for practising archery (lit., weapon) by the kings.

435. The length should be fifteen parts (and the breadth as before); and the pavilion should be made of two by three parts.

436. In front of that the verandah should be made of one part, and the attached courtyard of nine parts.

437. On the sides and in front of that the parade (*khalūrikā*) should be of two parts.

438. This is (also) called the *Droṇa* pavilion; it is used as the place of ram-fighting.

439. The length and breadth should be made of eight parts each.

440. The surrounding courtyard inside that should be made of two parts on each side (i.e., two parts square).

441. A parlour (dining) hall (*khalūrikā*) should be constructed on the (? one) part surrounding the outside of that.

442. Beyond that should be likewise constructed the surrounding pavilion of two parts around.

443. At the corners should be built four dwellings with two parts each.

444. Beyond that the verandah of the portico should be made of the (? one) part surrounding the outside of that.

445. The expert (architect) should make the (entrance) door on the left of the middle line (across the length).

446. Beyond that a parlour (*khalūrikā*) should be made on the surrounding part.

447. At the four corners (*karṇa*) should be made eight eye-like gable windows (*netra*), and it should be furnished with the porticos (*bhadra*) consolidated with *kankar*.

448. As an alternative, the middle compartment (*koshṭha*) should be made a four parts square.

449. The passage (gutter) for water extending downwards should be made of one part surrounding the outside of that (the compartment).

450. Beyond that one parlour (*khalūrikā*) should be made of the part surrounding the outside of that (the compartment gutter).

451. The pavilion should be built inside that, and the plough-shaped wall should be erected at the corners (*karṇa*).

452. It is preferable to omit the middle pillars or the pillars at the sides.

453. It should be furnished with the pinnacle (*kūṭa*) at the top, and it should be decorated with all ornaments.

454. On the surrounding part outside that should be made the shed with the yard (*prapāṅgaka*) of some desirable measure.

455. This is called the *Kharvaṭa* pavilion; it is suitable as the dining hall of the kings.

456. Of the same parts (i.e., measure) the central theatre-like open yard is desired to be of one by four parts.

457. The outside of that is desired to be surrounded by a pavilion of two parts.

458. Beyond that the surrounding verandah should be made of one part around.

459. The columns on the four sides as well as in the middle (i.e., centre) and the top should be omitted.

460-461. The breadth of the eye (*netra*) should be two parts, the projection one part, and the breadth of the middle portico (*bhadra*) attached at the middle should be twice (lit., two parts of) the projection.

462. There should be four doors on the four sides, and the corners should be consolidated with *kankar*.

463. It should be furnished with the top pinnacle (*kuṭa*), and it should be decorated with all ornaments.

464-465. In front of that (i.e., the courtyard) (there should be left some space) of equal breadth and length; and the breadth and length of

the courtyard of the pavilion should be four and six parts (respectively).

466. In the front and at the two sides should be (built) the front pavilion (*mukha-maṇḍapa*) of two parts.

467. There should be the (entrance) door (as usual), and in front of it should be the front portico, and the corners should be consolidated with *kankar*.

468. The (special) rule regarding the courtyard inside the pavilion is that it should have many faces.

469. It should be furnished with windows, and decorated with all ornaments.

470. This is (also) called the *Kharvaṭa* pavilion; it is suitable as the coronation hall.

471. The breadth should be nine parts, and equal to that should be the length in the front side.

472. The central theatre-like yard (*madhya-raṅga*) should be of three parts, and the surrounding verandah should be of one part.

473. Beyond that the surrounding pavilion should be made of two parts around.

474. Out of that, the theatre proper (*raṅgaka*) should be of three by six parts.

475. The learned architects should build the front (*mukha*) pavilion in the middle.

476. The verandah should be made of one part in front of that as well as at the two sides.

477. Beyond that and proportionate to it a pavilion should be made of two parts out of that (area).

478. The rest should be made as before; this is called the *Śrīrūpa* pavilion.

479. This is built in the temple of gods; this is (also) suitable for the coronation of the kings.

480. The breadth should be ten parts, and the length twenty parts.

481. The central theatre-like open yard (*madhya-raṅga*) should be of four parts, and the middle pillars should be omitted.

482. Beyond that, the surrounding verandah should be of one part, and the pavilion of two parts.

483. The reservoir of water should be built at the top of the surrounding part outside that (pavilion).

484. In front of that the theatre proper (*raṅga*) should be of two by six parts out of that (area).

485. Something like a pavilion should be constructed in the front and two sides of that.

486. This is called the *Maṅgala* pavilion, the rest being made as before.

487. This should be built in the royal palace; it is suitable for balancing of the king (*tulābhāra*).[1]

488. The assembly halls (i.e., council rooms) of the kings together with their proper situation will be described in order.

489–491. The breadth and length of the pavilion at the bottom (*mūla*) should be eleven parts each; at the forepart (lit., face, *mukha*) the breadth should be of equal parts as before, but the length should be one, two, or three parts (more); the breadth (at the bottom and forepart) should, however, be in a line: thus should be measured the council room.

492. The theatre (*raṅga*) should be a five parts square inside the main pavilion.

493. Beyond that a surrounding pavilion should be made of two by three parts around.

494. There should be four doors constructed on the four sides, and the plough-shaped walls should be erected at the corners.

495. Beyond that the surrounding verandah should be made of two or three parts around.

[1] Literally balancing the weight against some money; where the king weighs himself against some gold to be distributed as charity to deserving people.

496. The portico (*bhadra*) and the door should be attached to the four sides with two and three parts (respectively).

497. The staircase should be made on the sides, and be decorated with the trunk of the elephant.

498. This should be furnished with the base with pedestal, pillars, etc., and entablatures.

499. The peculiarity of the entablature is that it is adorned with a tower (*chūli-harmya*) at the top.

500. The central theatre should be furnished with the top pinnacle (*kūṭa*) of one, two, or three storeys.

501. The central theatre in the jewel-palace (in particular) should be ornamented as stated above.

502. A shed (*prapā*) should be made in front of it with proportionate dimension.

503. The dimension of the theatre (*nāṭaka*) should be five parts each way.

504. Many pillars should be erected of the three parts on the side.

505. The shed with yard (*prapā*) should be furnished with pillars together with pedestals and entablatures.

506. In the front should be made the portico (*bhadra*) and staircases, and the plough-shaped walls should be erected at the corners (*karṇa*).

507. These should be made with stone, wood, or mixed materials.

508. The remainder should be for the chapel (lit., temple of the gods), which should be in conformity with the pavilion.

509. This is suitable as an assembly hall, and it should be made such as to make every sound (*svara*) and letter (*akshara*) audible.

510. The breadth should be made four parts, and the length six parts.

511. The pavilion should be made of breadth and length as three and four parts (respectively)

512. A dwelling-house should be made at the bottom (i.e., under) the rafter (*vaṁśa*), with breadth two parts and length twice that.

513. In front of that the wall (*kuḍya*) and the pillar (*pāda*) should be made of two and three parts (respectively).

514. Beyond that the surrounding verandah (*vāra*) should be made of one part; this is called the *Kānta* pavilion.

515. This pavilion is suitable as the sport-seeing place (*līlā-lokana*) of the crown prince.

516. This should be furnished with a pinnacle (*kūṭa*) at the top and be decorated with all ornaments.

517. The pavilion should be built of breadth and length of six parts, and eight parts (respectively).

518-519. The dwelling-house should be built of two by three parts, and the pavilion of three by four parts; the dwelling-house should be made between the top and bottom of the rafter (*vaṁśa*), and the pavilion inside that (dwelling).

520. In front of that the verandah should be made of one part, and the walls (*bhittika*) should be made in some desirable directions.

521. In front of it the front verandah (door, *vāra*) should be made with dimensions of eight parts by two parts.

522-523. The dwelling-house should be constructed at the top and bottom (of the rafter) of two by three parts; or it should be made of two by three parts of the main dwelling house.

524. The main pavilion should be made of breadth and length of two parts and four parts (respectively).

525. In front of it as well as on the side the verandahs should be made of one part each.

526. The walls (*kuḍya*) should be erected around, and outside that should be the verandah (*vāra*).

527. Out of that should extend the projection, and the breadth of the portico (*bhadra*), both being made of two parts.

528. The width of the portico (*bhadra*) of the pavilion between the bottom and the top of the rafter (*vaṁśa*) should be three parts.

529. The projection (*nirgama*) should be of two parts, and the verandah (*vāraka*) should be (made) surrounding the portico (*bhadra*).

530. The pinnacle (*kūṭa*) should be at the top of the pavilion, and it should be shaped like a hall (*śālā*).

531. It should be furnished with eight faces (i.e., outlets), and the corners should be consolidated with *kankar*.

532. The expert (architect) should make the door on the left of the middle line (across the length).

533. This is called the *Śrīviśāla*; this pavilion is suitable as the residence for the queen.

534. The pavilion should be made of breadth and length of four and six parts (respectively).

535. The courtyard inside that should be a two parts square.

536. The breadth of the dwelling room is said to be two parts and the length four parts.

537. In front and at the back of it should be (left some space) one by two parts.

538. Beyond that the (surrounding) verandah should be made of one part, and a structure like the pinnacle (*kūṭa*) around.

539. The dwelling room should be made between the bottom and the top of the rafter (*vaṁśa*), and its door at its middle.

540. The door should be made on the left of the middle line across the length of the pavilion.

541. The name of this pavilion is the *Somārka* (the moon and the sun); it is used as the kitchen of the Brahmans.

542–543. The same breadth and length being increased by two parts (each) to four parts, the pavilion built should be fit (as the kitchen) for the Kshatriyas and all others.

544–545. The breadth being increased by two parts to twice, the pavilion (thus built) would be suitable as the refectory (i.e., kitchen) for the Vaiśyas and the Śūdras.

546. The walls may be made in all the eight quarters according to one's liking.

547-551. The pavilions of the gods and the Brahmans should be built in the *Jāti* style; the pavilions of the kings (including the Kshatriyas) are said to be built in the *Chhanda* style; those of all the Vaiśyas are said to be built in the *Vikalpa* style; and all the pavilions of the Śūdras are designated as of the *Ābhāsa* style; the styles (of the pavilions) have been distinguished by the ancient (authorities) in accordance with a certain number of porches (they are supplied with).[1]

552. The pavilion with two faces is called the *Daṇḍaka*, and those with three faces the *Svastika*.

553. The three-faced pavilions are shaped like the plough (*lāṅgala*); and the *Nandyāvarta* pavilions should be four-faced.

554-555. The six-faced pavilions are called the *Maulika*, and the pavilions may be furnished with eight faces (also): such pavilions are called the *Sarvatobhadra*; they (all the pavilions) should be decorated with all ornaments.

556. The pavilions for all (kinds of) villages will be (now) fully described according to rules.

557. They should be either square or rectangular, and they should be covered with even or odd number of walls.

558. Their roofing should be of the pent-roof type, or by the continuation of the entablature, or the towered (i. e., pinnacled) roof.[2]

559. When all the parts (of the roof) consist of the pent-roof, it (the pavilion) is called the *Sabhā* (assembly).

560-561. When the roof consists of the entablature all round and the pinnacle at the top (extending) over the central portion, it is called the *Maṇḍapa* pavilion; it is also called the *Maṇḍapa* when the whole roof forms the continuation of the entablature all over.

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[1] Several other architectural (and sculptural) objects also are classified under these four technical names; but in each case they have different distinguishing features (see details in the writer's *Dictionary* under those entries).

[2] That is, the roof should be of the type of pent-roof, flat roof, or sperical roof.

562. The pavilion of *Maṇḍapa* or the *abhā* (type) whichever befits the village should be so built in a convenient quarter.

563. They (the pavilions) in the *nagara* (cities) should correspond to their (of cities) plan[1]; and the length should be twice or one-and-a-half times (of the breadth).

564. In the *pattana* (ports) the length (of the pavilion) should be twice or one-and-three-fourths (the breadth).

565. In the *kharvaṭa* (small town) of the Śūdras the length (of the pavilion) should be twice the breadth.

566. The base and all other ornaments should be constructed as said before.

567-568. The wise (architect) should build pavilions by all the road (sides) where there passes a large traffic; sheds with yards, or pavilions, whichever suits better should be discreetly built (on the road-sides).

569-572. Those pavilions (which are) said to be suitable to the Brahmans, the Kshatriyas, the Vaiśyas, and the Śūdras should be also partly or wholly suitable to the gods; those suitable to the Śūdras, Vaiśyas, and the Kshatriyas should be also partly or wholly suitable to the Brahmans; those fit for the Vaiśyas and the Śūdras should be also partly or wholly suitable to the Kshatriyas; and those fit for the Śūdras should be also partly or wholly suitable to the Vaiśyas.

573-576. The pavilions recommended for the Śūdras should be made fit (by alterations and additions) for the Śūdras and the castes other than those (Śūdras, *i. e.*, Vaiśyas, Kshatriyas, Brahmans); but if that (alteration) be made (in the buildings) recommended for the Brahmans and others (in order to suit the inferior castes) the architect and the master would suffer loss.

Thus in the *Mānasāra*, the science of architecture, the thirty-fourth chapter, entitled:

The description of the pavilions.

[1] See Chapter X, also IX.

CHAPTER XXXV

THE STOREYED MANSIONS

1-2. The characteristic features of all kinds of storeyed mansions (*śālā*) fit for the residence of the gods, the kings, and the (four) castes will be described now.

3-4. They are of six kinds, namely, the *Daṇḍaka*, the *Svastika*, the *Maulika*, the *Chaturmukha*, the *Sarvatobhadra*, and the *Vardhamāna*.

5-6. The eleven kinds of width should begin from three cubits and end at twenty-three cubits, the increment being by two cubits.

7-9. The eleven kinds of width of the single row (*Daṇḍaka*) mansion (*eka-śālā*) are said to begin, in even number of cubits, from four cubits and end at twenty-four cubits, the increment being by two cubits.

10-14. The seven kinds of breadth should begin from seven cubits and end at nineteen cubits, the increment being by two cubits; (again) the best architect should begin from eight cubits and end at twenty cubits, the increment being by two cubits: these are the seven kinds of breadth of the *Svastika* and the *Maulika* (types of mansions).

15-17. The length of the mansions (*śālā*) of the gods and the ascetics is said to be up to twice the breadth which should be increased by two cubits (each time); the length of the mansions (*śālā*) of the four

castes, namely, the Brahmans and others, should be (also) up to twice the breadth.

18-20. The length of the mansion should be ascertained by commencing with its breadth, or increasing it by one-fourth, one-half, three-fourths, or making it twice, or greater than twice by one-fourth, one-half or three-fourths, or making it three times.

21-25. The height from the plinth (*janman*) to the apex should be equal to the breadth, or greater by one-fourth, one-half, or three-fourths, or twice the breadth; the first of the five proportions of height (from bottom to top) is known as *śāntika*, the second *paushṭika*, the third *jayada*, the fourth *dhanada*, and the fifth *adbhuta*.

26. According to other (authorities) the height of all kinds of mansions should be ascertained in proportionate measure (of the component members).

27-28. (Of the five proportions) the height, from the base (*pāda*, to the top) of the upper storeys, should be less than the height of the lower storeys by one-sixth, one-seventh, one-eighth, one-ninth, and one-tenth (respectively).

29-31. The height of the entablature should be one part and a half, and the upper platform (*vedikā*) half a part; twice that, (i.e., one part) should be the neck (*grīva*), and the head (*śiraḥ*) twice the height of the neck (i.e., two parts); one-half of the head (*mastaka*), (i.e., one part), should be the height of the spire (*śikhā*): thus is described (i.e., distributed) the height.

32-35. The *Chaturmukha* type of mansions belonging to the Gods, the Brahmans, the kings (Kshatriyas), the Vaiśyas, and the Śūdras, to the ascetics, the hermits, the warriors fighting with the help of the horse, the elephant, and the chariot, and to the Buddhists, the prosessional (Hindu) priests (lit., those performing *yāga* and *homa*, etc.),the artists, and the courtesans, should consist of a single row of buildings of two rows (on two sides), or of three rows (on three sides).

36–37. The suitable mansions for the gods, the twice-born, and others as mentioned above, should have one or more storeys and should be furnished with the top-tower (*chūli-harmya*), etc.

38. Those (mansions) of the gods, the Brahmans, and the kings (i.e., the Kshatriyas) should be ornamented like palaces (*prāsāda*).

39. The top-towers (*chūli-harmya*) should be omitted in case (of mansions) of the Vaiśyas and the Śūdras.

40–42. (All) the mansions should be furnished with a surrounding verandah (or balcony) and with a portico (*bhadra*) at the back, and a pavilion (*maṇḍapa*) in the front, and should be decorated with all ornaments : thus should be made (the mansions) of men and the gods.

43–44. The expert (architect) should construct a hall (*vāsa*) in the centre of the mansions for the gods ; the halls (*vāsa*) should be constructed on the (either) side of the mansions of the twice born and all others.

45. The halls may also be constructed along the length of the mansions and at the bottom of the joint (*vaṁśa*).

46. In the mansions for the female occupants (lit., the housewives) the halls should be constructed on the left (side).

47. The *Daṇḍaka* class of mansions of all castes should be constructed on all the four sides.[1]

48. The *Daṇḍaka* class of mansions should be laid out in the east, the south, or the west.

49. Such (*Daṇḍaka* mansions) should be suitable to the ministers ; nor is the northern entrance suitable for the kings[2].

50. When the mansions in the south and the west are joined up it is called the *Svastika*.

51–53. Mansions in all other sides than that (i.e., the south and the west) should not be joined : that is, in the *Svastika* mansions, it would be ruinous if the buildings on the east and the south, on the east and the north, or on the west and the north be joined up.

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[1] Compare lines 9, 35 where buildings are stated to be constructed on one, two, or three sides, and lines 66-74.

[2] Compare lines 54-55.

54–55. If the mansions on the east and the south, or on the south and the west, be joined it is called the *Maulika.*

56-57. It will be all defective if through ignorance the mansions on the three sides are joined, namely, those on the east and the north, the west and the north, and the east and the south.

58. The *Svastika* mansions alone are suited to all (classes of) courtesans.

59. The mansions called the *Maulika* should be built for all the chiefs (*adhyaksha*).

60-61. The (entrance) door should be constructed in the front, and walls (*kuḍya*) as stated before, in all the mansions of the (first) three classes, namely, the *Daṇḍaka*, and others (i.e., *Svastika*, and *Maulika*).

62. That of which the mansions on the four sides are joined up is called the *Chaturmukha.*

63. The same (mansion) with a corridor (*antarāla*) in the front is called the *Maulika.*

64. The same (mansion) with many porticos (*bhadras*) is called the *Sarvato-bhadra.*

65. That is (called) the *Vardhamānaka* where the *Daṇḍaka* (i.e., single row) mansions on the four sides are joined up.

66. The *Daṇḍaka* is an isolated mansion; it is a synonym for *eka-śālā* (one row of buildings).

67. The *Svastika* mansion is plough-shaped, and synonymous with *dvi-śālā* (two rows of buildings).

68. The *Maulika* is winnowing-basket-shaped; it is (called) *tri-śālā* (three rows of buildings).

69. The *Chaturmukha* is also called *chatuḥ-śālā* (four rows of buildings): thus has been laid down by the learned (architects).

70. The *Sarvatobhadra* is specially called *sapta-śālā* (seven rows of buildings).

71. And of all the *Vardhamāna* is called the *daśa-śālā* (ten rows of buildings).

72-74. In the single row mansions (*eka-śālā*) there should be no joint (*sandhi*), and in the two-row-mansions there should be one joint; in the three-row-mansions there should be two joints; and in the fourrow-mansions there should be three joints; in the seven-row-mansions there should be six joints; and in the ten-row mansions there should be many joints.

75. The four-row-mansions ending at the *Vardhamāna*[1] should be furnished with all the (twelve) storeys.

76. The (first five classes of) mansions ending at the *Sarvato-bhadra* are meant for the *Adhirāja* and the *Narendra* classes of kings[2].

77. The four classes of mansions commencing with the *Daṇḍaka* are meant for the *Pārshṇika* and the inferior classes of kings.

78. The (three classes of) mansions commencing with the *Daṇḍaka* and ending at the three-rowed one (i.e., the *Maulika*) are assigned to the *Paṭṭadhara* (class of kings).

79. The (two classes of) mansions commencing with the *Daṇḍaka* and ending at the *Svastika* are meant for the *Maṇḍaleśa* and the inferior classes of kings.

80. According to some all types of mansions are fit for the (*Chakravartin* class of) kings who put on three kinds of crowns (*tri-vidha-maulin*).[3]

81. The arrangement of the *Daṇḍaka* and the other classes of mansions will be now described in order.

82-84. When the mansions are built in the east and the west the hall (*ālaya*) may be optionally situated extending from the west to the east; and when the mansions are built in the north and the south the (corresponding) halls should be built extending from the north and the

[1] That is, including the *Maulika*, the *Chatur-mukha*, and the *Savarto bhadra* classes (see lines 3-4); but the *Maulika* has been stated to consist of three rows of buildings (see line 68).

[2] Kings are divided into nine classes (see chapter XLII. 2—5).

[3] This universal monarch class of kings is mentioned unusually at the last; for the details of the crowns see chapter XLIX.

south; in other words, those mansions may be built in (all) the four directions.[1]

85. Of the single row (*Daṇḍaka*) mansions (built) in the east the (entrance) door should be on the west.

86. Of the *Daṇḍaka* mansions in the south the entrance) door should be on the north.

87. Of the single row (*Daṇḍaka*) mansions when built in the west the (entrance) door should be on the east.

88. Of the northern *Daṇḍaka* mansions the entrance door should be on the south.

89. (In the first type of the *Daṇḍaka* mansions) the breadth should be one part and the length may be as many parts (as one likes).

90. The verandahs (or balconies) of the (*Daṇḍaka*) mansion are said to be constructed on some desirable directions.

91. The (main) pillar should be of some desirable height, and it should be connected with the base of the wall (*kuḍya*).

92. The pillar should be erected in the front and the wall (*kuḍya*) on the back.

93. It (this type of the *Daṇḍaka* mansion) should be decorated with the platforms (*vedikā*), etc., inside or outside the compound wall (*prākāra*).

94. Thus is described the *Daṇḍaka*, furnished with the enclosure (*prākāra*), etc.

95. (Of the second type of the *Daṇḍaka* mansion) if the breadth be one part, the length is said to be two parts.

96. At the forehead part (*lalāṭa*) on the upper portion of the second storey it should look like a broken staff (*daṇḍa*).

97. This is called the *Paṇḍi-śālā*; it is suitable for all classes of people.

98. The same furnished with a verandah in front is called the *Bhinda-śālā*.

99. (Of the third type of the *Daṇḍaka* mansion) the breadth should be two parts and the length three parts.

[1] Compare line 379.

100. This mansion should be wider at the base; and the verandah in the front should be one part.

101. At the face portion the mansion should have two wings (lit., eyes, *netra*), and the halls should be made of one part each.

102. Around it (the wing) should be the verandah made of one part, and as before there should be two forehead-towers (above the two wings).

103. The (entrance) door should be opened at the middle (of the front side of the mansion), and it (the mansion) should be single-storeyed at the front.

104. This is fit for the gods, and is called the *Daṇḍa-kānta.*

105. (Of the fourth type) the breadth should be made of two parts and the length of four parts.

106. The verandah should be made of one part in front along the width of the mansion.

107-108. The hall should be made of one by two parts, and it should be built at the base (of the mansion); as an alternative the hall may be built at the bottom of the joint (*vaṁśa*) as a two part square.

109. The theatre-like courtyard (*raṅga*) should be made at the forepart of the joint, and in front of it should be the verandah made of one part.

110—113. As an alternative the aforesaid two halls may be built at the middle of the site (i.e., mansion); one (of these) being built towards the inner side and the other towards the outer side; their (entrance) door should be at the middle or left side (of the front); or the (whole length of the mansion) should be divided into two (lit., a half) portion by erecting a wall (*kuḍya*) at the middle (of the length), and the two (lit., the first and the second) halls should be built on the sides of the wall, and the (entrance) door should be made (as stated before).

114. The rest should be made as said before: this is called the (fourth type of the) *Daṇḍaka* mansion.

115. This is suitable to all castes, and for all purposes.

116. (Of the fifth type) the breadth should be made of three parts and the length of four parts.

117. The mansion at the front should be wider, and the length (thereof) should be four parts.

118. The verandah in front should be of one part, and the wall (*bhitti*) should be constructed all round.

119-120. The theatre-like courtyard of the hall should be made a two part square in front of the base; as an alternative the hall may be made between the top and bottom of the joint (*vaṁśa*) of one by two parts.

121. The theatre-like courtyard (*raṅga*) should be constructed in the middle and the wall (*bhitti*) on the back and the sides.

122. The colonnade should be constructed in the front (right), and the middle columns should be omitted.

123-124. The verandah should be made of one part all round; thus is described (the fifth type of) the *Daṇḍaka* mansion; the rest should be made as said before: this (type) is suitable to people of all castes.

125. (Of the sixth type) the breadth should be made of four parts and the length of six parts.

126. The breadth of the (main) hall (*śālā*) in the middle should be of two parts and the length four parts.

127-128. The hall numbering one or two should be made of one by two parts or two part squares; (in case of two such halls) one should be made between the bottom and top of the joint (*vaṁśa*), and another at the bottom of the joint.

129. Beyond that (hall) the verandah should be made of one part around.

130-131. Beyond that a wall (*kuḍya*) or the colonnade should be erected all round; if the wall be erected around, a surrounding verandah should be made of one part.

132. The breadth of the portico (*bhadra*) should be one part, and that of the projection (*nirgama*) two parts.

133. The porticos should be constructed on the four sides, and there should be made two foreheads (*lalāṭa*) as before.

134. The second storey should be furnished with the corner towers (*karṇa-harmya*), etc., and be decorated like a palace (*prāsāda*).

135. As an alternative the mansion may be decorated with the pinnacle (*kūṭa*), etc., and the balcony may be dispensed with.

136. The expert (architect) should make the (entrance) door on the left of the middle line (across the length).

137. According to some, the hall (*śālā*) should be of two parts, and the verandah (or balcony) in front of one part.

138. The halls should be made in some convenient quarter, and the rest should be made as before.

139. This type of the *Daṇḍaka* is stated to be fit for the gods, the Brahmans, and the kings (Kshatriyas).

140. The same without any surrounding verandah is fit for all (other) people.

141. (Of the sixth type) the length should be greater than the former by two parts, and the breadth should be as before.

142. The hall should be made of four parts between the bottom and the top of the joint (*vaṁśa*).

143. Between those two halls should be constructed the central theatre (*madhya-raṅga*) with four parts.

144. Thence (extending) the verandah in front should be made of one part, and that on the back of two parts.

145. The rest should be made as before: this is (the sixth type of) the *Daṇḍaka* fit for all castes.

146. (Of the seventh type) the breadth should be made of five parts, and the length of seven parts.

147-148. The hall (lit., pavilion, *maṇḍapa*) should be made of five parts in the middle, or of two parts on each of the two sides; and of the remainder the verandah should be made in the front and at the back.

149. Beyond those (verandahs) the (entrance) door should be made of the surrounding part, and the portico (*bhadra*) of two parts.

150. The pinnacle (*kūṭa*), the compartment (*koshṭha*) and all other members should be ornamented like (those of) the palace (*prāsāda*).

151. Thus is described the (seventh type of the) *Daṇḍaka*, fit for the residence of the gods.

152. (Of the eighth type) the breadth should be made of six parts and the length of eight parts.

153. The theatre-like courtyard (*raṅga*) in the middle should be constructed of three, four, or two parts.

154. The verandah should be constructed on the back with one or two parts.

155. The verandah in the front should be of one part, and the two halls (*vāsa*) should be of four parts (each).

156. The hall (*vāsa*) should be made between the bottom and top of the joint (*vaṁśa*), and the courtyard (*raṅga*) in the middle.

157-158. As an alternative, the halls may be built at its four corners (*karṇa*) of two parts each, or on the two foreheads (*lalāṭa*) the hall should be built of three parts.

159. The verandah should be made of one or two parts all round.

160. The expert (architect) should construct the (entrance) door on the left of the middle line (across the length).

161. It may be made of one or more storeys, and should be decorated like the palace (*prāsāda*).

162. This is said to be the (eighth type of the) *Daṇḍaka*; it is fit for all castes.

163. Pavilions (*maṇḍapa*) should be constructed in front of all types of the *Daṇḍaka* mansions.

164-165. The breadth of the pavilion built of any other desirable proportion around the central courtyard should be equal to or twice or thrice that (the mansion).

166. The hall (*vāsa*) in front should be broad, and equal to that the portico (*bhadra*) at the back.

167. One-half of that should be the projection (*nirgama*), and the portico (*bhadra*) should optionally be made proportionate to the hall (*vāsa*).

168. Proportionate to the pavilion (*maṇḍapa*) should be made the portico (*bhadra*), and its face part should be consolidated with *kankar*.

169-171. The (whole) length of the *Daṇḍaka* mansion being divided into nine parts, five parts should be left on the right side of the hall (*gṛiha*), and three parts on the left; between these two the expert (architect) should make a door of one part.

172-173. The (*Daṇḍaka*) mansions of all classes (of occupants) should correspond to the *āśi* of the master; the *Daṇḍaka* mansions should be also made (lit., taken) to be favourable to the mistress of the house.

174-177. Those (*Daṇḍaka*) mansions which are built on the east and the south are auspicious for people of the Mesha, Mīna, or Kumbha *rāśi*; those on the south and west should be for people of the Kulīra (Karkaṭa), Aksha (Vṛisha), or Mithuna *rāśi*; those on the west and the north are auspicious for people of the Tulā, Siṁha, or Kanyā *rāśi*; and those on the east and the north are auspicious for people of the Grāha (i.e., Makara), Vṛiśchika, Chāpa (i.e., *Dhanus*) *rāśi*[2].

178-179. The single block (*Daṇḍaka*) mansions should not be built otherwise than that stated above to be auspicious: thus is described the *Daṇḍaka* mansions with reference to the *rāśis*[3].

180. The time of commencement for building of the single block (*Daṇḍaka*) mansion on (any of the) four directions is stated here.

1, 2, 3 One of the twelve signs of the zodiac; compare note 1, p. 404.

181-183. The building of the (*Daṇḍaka*) mansions is said to be commenced on an auspicious moment of some good conjunction (*lagna*) in the east in the months of Kumbha (January and February) and Makara (December and January); in the south in the months of Mesha (March and April) and Vṛishabha (April and May), in the west in the months of Siṁha (July and August) and Karkaṭa (June and July), and in the north in the months of Vṛischika (Cotober and November) and Tulā (September and October).

184-185. As an alterative the (*Daṇḍaka*) mansions of all (people) may be commenced on either of those months; but no building work should be taken up on the four months omitted (lit., not mentioned) here.

186-187. The Spirit of the site (*Vāstu-purusha*) should be marked in four parts on the four quarters [1], according to whose measure it would be auspicious to build all (types of) mansions.

188. But no mansion should be built with the spirit of the site placed in the reverse directions.

189-190. It would be dangerous (i.e., inauspicious) to make a building when the Spirit of the site is placed in a reverse direction; therefore, the position (lit., lying, *śayana*) of the spirit will be now shown and described.

191. The legs (of the Spirit) should be stretched out in the same directions as the Āditya (sun) is placed (i.e., the plots of Āditya).[2]

192-193. His head should be turned with face downwards[3]; similarly should be his left hand and right hand stretched out upwards: this is known to be the lying position of the Spirit.

194. The length and breadth of the mansion (lit., house) should be (situated) along the length and width of the Spirit.

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[1] The Spirit is marked with face downwards and his two hands and two feet pointing to the four intermediate directions (i.e., N.-E., N.-W., S.-W. and S.-E.) For details see pages 52, 54, chapter VII, lines 255—265.

[2] See chapter VII.

[3] See chapter VII, line 255, page 52, note 1.

195. Along the length of the mansion should be the legs (of the spirit) covering four parts upwards.

196. The belly (*kukshi*) should occupy one part at the end of the four central plots (lit., parts).

197. The length of the leg from the sex organ to the sole of the foot (*tala*) should cover four plots.

198. The length of the head should occupy one part at the end of the four parts above the sex organ.

199. The position of the heart (of the Spirit) is said to cover one part below the head.

200. The middle body is said to cover the part between the heart and the belly.

201. The middle line across the breadth (of the mansion, where doors are opened) is known to be identical with the mouth passage (of the Spirit).

202. Thus is shown the Spirit of the site : he should be marked in all mansions.

203. Thus is finished (the description of) the *Daṇḍaka* mansions. The *Svastika* (mansion) will be described now.

204. (Of the first type of the *Svastika* mansion) the breadth should be eight parts and the length ten parts.

205. The abovementioned ornaments should be clearly understood and set up in their proper measure.

206. The breadth of the courtyard in front should be five parts and the length seven parts.

207. The verandah on its sides should be made of one part, and shaped like the *Svastika*[1].

208-209. There should be two mansions (*śālā*) on its two sides (i.e., directions) with width of two parts each ; between those two the (main) hall should be made in the south-west as a two-part square.

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[1] See page 63 and the plates under chap. IX.

210. The mezzanine rooms (lit., compartments, *koshṭhaka*) should be made of two parts each at the region of the two upper portions of the joint (*vaṁśa*).

211. Beyond that the surrounding verandah should be made of the (one) part around.

212. Porticos (*bhadra*) should be made of one or two parts at the corners (*karṇa*) and consolidated with *kankar*.

213. The face (*vaktra*) should be in front of the two blocks of mansion, and the projection (*nirgama*) should be made of one or two parts.

214. On each side of the courtyard should be made the door of the wall (*kuḍya*.)

215. The door should be constructed as before along the length or breadth of the mansion.

216. The expert (architect) should build it in the south-west one or more storey high.

217. Thus is described the (first type of the) *Svastika* mansion, it is suited to those stated before.

218. (Of the second type of the *Svastika* mansion) the breadth should be ten parts and the length twelve parts

219. The breadth of (each of) the two blocks of mansion should be made of three parts.

220. The width of the verandah in front as before should be three parts.

221. (And) the halls (*vāsa*) should be made of three parts each, and the rest should be made as before.

222. Thus is described the *Svastika* (mansion). The *Maulika* mansion will be described now.

223. (Of the first type of the *Maulika* mansion) the breadth should be ten parts and the length two parts more (i.e., twelve parts).

224–225. The breadth of the courtyard between the three blocks of mansion should be four parts; its length should be eight parts, and the surrounding verandah should be made of one part around.

226. The width of the mansion at the back and the two sides of that (verandah) should be two parts.

227. The halls (*vāsa*) should be of two parts each, and there should be two or three of them at the corners (*karṇa*).

228. Beyond those (halls) the surrounding verandah should be made of one or two parts.

229. There should be six faces of equal length, and the projection (*nirgama*) should be of one or two parts.

230. It (the mansion) should consist of one or more storeys towards the courtyard in the south-west and the north-west (corners).

231. Thus should be built the (first type of the) *Maulika* mansion; it is fit for those mentioned before.

232. (Of the second type) the breadth should be twelve parts and the length two parts more than the breadth (i.e., fourteen parts).

233. The verandah should be made of one part at the front, and the back.

234. The (entrance) door in front as in the *Daṇḍaka* mansion should be made in conformity with the shape of the (*Svastika*) mansion, or of three parts.

235. The rest should be made as said before, and it should be decorated with all ornaments.

236. (Of the third type) the breadth should be thirteen parts and the length one part more (i.e., fourteen parts).

237. The breadth of the courtyard should be five parts and the length ten parts.

238. Beyond that the verandah (*vāra*) on the surrounding area should be two parts of the (whole) mansion.

239. The verandah should be made of one part at its back and two sides.

240. The pavilion (*maṇḍapa*) should be made in conformity with the mansion, or three-fourths in size, or a three part square.

241. The hall (*vāsa*) should be made of three parts in the middle of the mansion.

242. There should be four mezzanine rooms (lit., pavilions), *maṇḍ :pa*) at the top of the two joints (of the blocks).

243. There should be three halls (*vāsa*) with the verandah of one part round the outside.

244. The door should be made in the middle, and the portico (*bhadraka*) of five by two parts.

245-246. The porticos should be discreetly constructed at the back and the middle of the two sides; at the corner there should be one portico, and at the front of the mansion one eye-like portico (*netrabhadra*).

247. It should be furnished with the side-towers (*karṇa-harmya*), etc., and ornamented like the palace (*prāsā la*).

248. It should consist of one or more storeys, placing one hall upon the other.

249. Thus is described the (third type of the) *Maulika*; it is fit for the gods.

250-251. The same with mezzanine rooms (*maṇḍapa*) at the corners and front, and inside the hall (*vāsa*), is said to be the mansion fit for the universal monarchs (*chakravartin*).

252. Thus is finished the description of the *Maulika*. The *Chaturālaya* (i.e., *Chāturmukha*) mansion is described now.

253. (Of the first type of the *Chatur-mukha*) mansion the breadth should be ten parts and the length twelve parts.

254. The breadth of the courtyard in the middle should be two parts and the length four parts.

255. On the (? one) part surrounding the outer side of that should be constructed the verandah of the *Nandyāvarta* shape [1].

256. Beyond that (verandah) should be the four mansions (*śālā*) on the four directions beginning with the east.

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[1] According to the *Bṛihat-saṁhitā* (LIII-32) a terraced building with door on hree sides; according to the *Kāmikāgama* (XXXV. 88—90; LIV, 7-37) there are sixteen kinds; according to the *Suprabhedāgama* (XXXI. 4-50, 103) it should be a pavilion with various details (see the writer's *Dictionary*, pages 295, 296, 294).

257-260. (One of those four mansions) in the east should extend from north to south, and its forehead, (i.e., face (*lalāṭa*) should be on the south; one in the south should extend from east to west, and the forehead (*lalāṭa*) should be on the west; one in the west should extend from south to north, and its face (*vaktra*) should be on the north; and the one in the north should extend from east to west, the eyes (*netra*, i.e., face) being on the east.

261-263. The width of these mansions should be three parts each in the directions by which they extend; the length of the mansion in the east and the west should be six parts each, and the length of the mansions in the south and the north should be eight parts each.

264. Such should be the (dimensions of the) four mansions; they should be shaped like the *Daṇḍaka* mansions joined up.

265. The verandah should be of one or two parts round the outside.

266. The projection of the breadth of the face (*netra*, lit., eye) should be one, two, three, or four parts.

267. These mansions should be furnished with faces (*netra*, lit., eye) the projection of the outer face being one part.

268. The four eyes (i.e., faces) should look towards the outside; therefore it (the mansion) is called the *Chaturmukha* (of four faces).

269. They should be furnished (lit., enriched) with bases and other assemblage of ornaments (*varga*), and should be decorated like the palace (*prāsāda*).

270. They should consist of one or more storeys, and should be adorned with all ornaments.

271. Thus is described the (first type of the) *Chaturmukha* mansion; it should be shaped like the *Nandyāvarta* [1].

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[1] See note under line 255.

272. (Of the second type) the breadth should be twelve parts and the length fourteen parts.

273. The breadth of the courtyard in the middle should be four parts, and the length six parts.

274. On the part surrounding the outerside of that should be the verandah as before.

275. The longest mansion should be of ten parts and the shortest of two parts.

276. The breadth should be made as before; as an alternative the verandah may be of three parts.

277. The rest should be made as before: this (type of) the *Chaturmukha* mansion is fit for the gods.

278. (Of the third type) the wise (architect) should make the breadth and the length greater than the former by two parts.

279. The breadth of the verandah should be two parts, and all (the rest) should be made as before.

280. The hall should be made, as one likes, in some convenient directions, preferably in the interspace (i.e., corner).

281. The door to the inner mansion should be made as said for the *Daṇḍaka* mansions.

282. Thus is finished (the description of) the *Chaturmukha* mansions; they are recommended for those mentioned before.

283. The setting up and the arrangement of the *Sarvatobhadra* mansion will be described now.

284–286. The *Sarvatobhadra* should be a square; it being divided into eight parts the central courtyard should be of four parts, and the surrounding verandah of one part around; the mansion proper should be made of the two surrounding parts, and it should be furnished with four halls (*vāsa*).

287. (Of the first type of the *Sarvatobhadra* mansion) the breadth should be otherwise two parts, and the length four parts.

288. At the four corners there should be four pavilions (*maṇḍapa*), each of which should be of four parts.

289. The surrounding verandah should be made of one part round the outer side of those (pavilions).

290. There should be furnished four doors in the four directions, and four porticos (*bhadras*).

291. The breadth of the portico (*bhadra*) should be four parts, and its projection two parts.

292. The staircases should be made of one part at the corners for the purpose of ascending to the upper floors.

293. The courtyard may be covered with a roof (*prachchhādana*) on it, or it may be without a roof.

294. This (type) should consist of one or more (lit., many) storeys, and should be decorated as before.

295. It should be furnished with the side towers (*karṇa-harmya*), etc., and ornamented like the palace (*prāsāda*).

296. This should be (the first type of) the *Sarvatobhadra* , it is recommended for those mentioned before.

297. (Of the second type) the breadth should be as before, and the length (should be divided into) ten parts.

298. The courtyard in the centre, extending outwards or inwards should be a four part square.

299. The surrounding part outside that (courtyard) should be consolidated with *kanar* as ornaments.

300. The rest should be made as before; thus is finished the description of the *Sarvatobhadra* mansions.

301. The characteristic features of the *Vardhamāna* mansions will be described now.

302-305. The eleven varieties of breadth are said to begin from nine or ten cubits and end at twenty-nine or thirty cubits, the increment being by two cubits ; the length should be, as said before, twice the breadth ; and the height should be as before.

306. (Of the first type of the *Vardhamāna* mansion) the breadth should be ten parts, and the length twelve parts.

307. The breadth of the courtyard in the middle should be two parts and the length four parts.

308. Outside that, the surrounding verandah should be optionally four parts.

309. The breadth of the surrounding mansion outside that should be two parts.

310. Equal to that should be the surrounding verandah constructed outside that.

311. It (the mansion) should be made single storeyed in the north-east and two-storeyed in the south-east.

312. In the north-west it should be made of three storeys, and in the south-west of five storeys.

313-314. In the south and the west the block (*Daṇḍaka*) should consist of four storeys; and in the east, the north, and the centre the block should be single storeyed.

315. The length and breadth of the hall (*griha*) at the four corners should be two parts each.

316-318. The face (front) pavilion (*mukha-maṇḍapa*) in the east is said to be a two part square; equal to that should be made the pavilion in the west; and the pavilion should be of two by four parts in the south, the north, and the middle.

319. The remainder should be for the surrounding verandah which is furnished with the cage-like windows (*pañjara*).

320. Porticos (*bhadra*) should be constructed on the two sides with dimensions of two by four parts.

321. The expert (architect) should make the portico (*bhadra*) at the back of one by two parts.

322. The front door in the east should be made of two by four parts.

323. The verandahs should be made of one part at the side and front of all the porticos (*bhadra*).

324. It should be furnished with pedestals, bases, pillars, and entablatures, etc.

325. It should be also adorned with the corner towers (*karṇa-harmya)* and other assemblage of ornaments (*varga*), and the inter-spaces (corridors) should be furnished with entablatures.

326. All its component members such as the pinnacle and the compartments (mezzanine rooms), etc., should be furnished with vestibules (*nāsikā*, lit., nose) and the cage-like windows (*pañjara*).

327. It should be furnished with ornamental jugs connected with creepers, and be adorned with arches (*toraṇa*), etc.

328-329. All (the types of the *Vardhamāna*) should be decorated with (ornamental) crocodile-faces; and they should be furnished with the head (*śiras*), the neck (*grīva*), the vestibule (*nāsikā*), and the platform (*vedikā*).

330. Such should be the (first type of the) *Vardhamāna* mansion; it is fit for the Kshatriyas.

331. (Of the second type) the breadth should be twelve parts, and the length greater than that by two parts (i.e., fourteen parts).

332-336. One block (lit., a structure in conformity with the mansion) should be made of three to five storeys high, extending from north to south, and with its breadth and length of four and six parts respectively; in the south-east and the north-west corners it should be made of three storeys high; in the west the mansion (*śālā*) should be of two by four parts, and five storeys high; and in the east the pavilion (*maṇḍapa*) should be of two by four parts, and single storey high.

337. In the north-east too it should be single storeyed, and it should be ornamented like the palace (*prāsāda*).

338. In the south-west it should be seven storeys high, and its pinnacle (*kūṭa*), mezzanine rooms (lit., compartment, *koshṭha*), etc., should be as before.

339. The portico (*bhadra*) should be constructed in the middle of it, and the projection of the length should be one part.

340. There should be one corner pinnacle (*karṇa-kūṭa*) at each of the four corners.

341. The chains (*hārā*) should be made of one part at the pinnacle (*kūṭa*), between two porticos (*bhadra*), and at the middle.

342-343. It should be decorated with the base, and other members, and adorned with the corner towers (*karṇa-harmya*), etc.; (that is) it should be ornamented like the palace (*prāsāda*), and the rest should be made as before.

344-346. At the two sides of the single block mansion (*eka-śālā*), the porticos (*bhadra*) should be of one by four parts; the expert (architect) should make the porticos (*bhadra*) at the back of two by four parts; or as an eight part square the porticos may be discreetly constructed.

347. As an alternative, at the back may be constructed a structure in conformity with the mansion (*śālā*) (instead of the portico) of x by two parts.

348. The breadth of the front door should be four parts and the length six parts.

349. The verandahs in the front and at the two sides should be of one part (each).

350. A pavilion-like structure (*maṇḍapākāra*) should be made of two by four parts in the middle of that front verandah.

351. The staircases should be attached to the front, and they should be adorned with all ornaments.

352. The porticos (*bhadra*) and all other members should be symmetrically made for each of the storeys one above the other.

353. One pillar should be erected (exactly) above the other (in the upper storey; and one wall (*bhitti*) above the other.

354-355. If the wall (*bhitti*) be extended over the pillar (*pāda*) it will be defective in all respects; but if the pillars be raised above the wall (*kuḍya*) it would be all auspicious.

356. It (the mansion) should be furnished with all the members, and be decorated with all ornaments.

357. Thus is (described) the seven-storeyed *Vardhamāna* (mansion) ; the rest being as before.

358. (Of the third type of the *Vardhamāna* mansion) the breadth should be fourteen parts and the length sixteen parts.

359. The courtyard and the hall (*śālā*) should be made as before, (but) the portico (*bhadraka*) should be one part more.

360. In the south-west, it (the mansion) should be of nine storeys high, and the other members should be discreetly built.

361. It should be furnished with all ornaments and decorated like the palace (*prāsāda*).

362-363. The (main) door should be constructed on the left of the middle line or at the middle (of the length); and the (other) above-mentioned doors of the *Vardhamāna* mansion should be suitably made.

364. Thus should be built the nine-storeyed *Vardhamāna* mansions for the king.

365. (Of the fourth type) the breadth should be sixteen parts, and the length should be (divided into) two parts more (*i.e.*, eighteen parts).

366. Of those parts, the hall (*śālā*) should be of two parts, and the rest should be as before.

367. It should consist of eleven storeys in the south-west, and of three storeys in the north-east.

368. In the south-east and the north-west it should be made of five storeys.

369. In the south it should consist of seven storeys, and in the north of five storeys.

370. In the west it should consist of seven storeys, and in the east of two storeys.

371. Thus is known to be the eleven-storeyed *Vardhamāna* mansion.

372. The rest should be made as before, and it should be adorned with all ornaments.

373. (Of the fifth type) the same breadth and length should be increased by one part each way.

374. The breadth of the central courtyard should be five parts and the length seven parts.

375. The rest should be made as before, (but) it should consist of twelve storeys in the south-west.

376. It should be made of five storeys in the north-east, and of seven storeys in the south-east.

377. In the north-east it should consist of eight storeys ; as an alternative, it may be of seven storeys.

378. It should be made of nine storeys in the south, the west, and the middle (centre).

379. This *Vardhamāna* mansion of all (types) should extend lengthwise from the east to the west[1].

380. It should be made like the *Daṇḍaka* (i.e., of single block) on the sides, but with floors on different storeys.

381. The halls (*vāsa*) one upon the other (on different floors) should have the same shape as in the first storey (i.e., ground floor).

382. The doors also (of the different storeys) should be made one upon the other of the same size (as in the first storey).

383. It would destroy all prosperity if the wall (*kuḍya*) be extended over the door.

384. The wall (*kuḍya* , the theatre-like courtyard (*raṅga*), and the verandah (*alinda*) should be furnished with colonnade.

385-386. The middle pillars should be omitted in the hall (*vāsa*) and the sanctuary (*garbha-gṛiha*) ; they should end at the wall (*kuḍya*) and their measurement should be made as said before.

387. If there be halls (*vāsa*) in each storey, they should be constructed upon the entablatures (i.e., floors).

388. The measurement (i.e., dimensions of the pinnacle (upper mezzanine) rooms etc., should be the same as the measurement (i.e., dimensions) of the verandahs at the ground floor.

[1] Compare lines 82-88.

389-390. The great doors should be furnished with great porticos (*bhadra*) which should be shaped like the pavilion (*maṇḍapa*); and the minor (*upa*) doors should also be made symmetrically as said before.

391. There should be made various walls (*bhitti*) in convenient quarters (with the length) extending towards some desirable directions.

392. The staircases should be constructed in each storey for ascending (and descending) purposes.

393. All other particulars not mentioned here should be made according to the rules of the science (of architecture).

394. Thus is said to be the twelve-storeyed *Vardhamāna* mansion by the ancients.

395. Similarly the *āya* and other formulas concerning the mansions described (by the ancients) will be stated below [1].

396-398. The formulas of *āya*, *vyaya*, and *ṛiksha* should be considered with regard to the length, of *yoni* with regard to the breadth, and of *tithi* and *vāra* with regard to the circumference; the remainders as before being preferable for the mansions (*gṛiha*); the division (*kshaya*) and the multiplication (*vṛiddhi*), and all other particulars should be considered according to the rules which are stated to be applicable to the mansions (*harmya*) also.

399-402. All the mansions should be furnished, excluding the ground floor, with vestibules (*nāsikā*) and arches (*toraṇa*), etc; and be decorated with representations of leaves, the female crocodile-faces, and be adorned with various ornaments: thus they would be the source of beauty, fortune, health, and enjoyment (comfort).

Thus in the *Mānasāra*, the science of architecture, the thirty-fifth chapter, entitled:

The description of the storeyed mansions.

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[1] See chapter IX. 63—98, pages 65-67: Chapter XXX, 168—193; and the writer's *Dictionary*, pages 600—610.

CHAPTER XXXVI

THE SITUATION AND MEASUREMENT OF DWELLING HOUSES

1-2. The situation and measurement of houses fit for dwelling of the twice-born and all other castes will be described now.

3-5. The best architect should select the site for their dwelling-houses in a village, city, trading centre on sea or river (*pattana*)[1] fortified city (*kheṭaka*)[2], hermitage, on the bank of a river, and by the side of a hill.

6-7. The five kinds of (their) dimensions (breadth and length) should begin from two and three *daṇḍas* (of four cubits each) and end at ten and eleven *daṇḍas*, the increment being by two *daṇḍas*.

8-13. The length of the house should be greater than the breadth by one-fourth, one-half, three-fourths, or twice (as much); or the length may be greater than (twice) by one-fourth, one-half, three-fourths, or three times; or it may be greater (than three times) by one-fourth, one-half, three-fourths, or four times; thus should be the breadth and length of the house, (but) the breadth (in all cases) should be proportionate to the length.

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[1] For details see the writer's *Dictionary*, pages 233—234.

[2] For details see the writer's *Dictionary*, pages 157—159.

14. The *Parama-śāyika* plan (of eighty-one plots) should be marked within the length and width (breadth) of the house.

15. Except the *Brahmā* (central) plot all other plots are suitable for all kinds of dwelling-houses.

16-17. It would be prosperous to build the main houses of the twice-born in the four plots, namely, the *Ārya*, the *Vivasvat*, the *Mitra*, and the *Bhūdhara* [1].

18-19. In the plots of *Vivasvat*, *Mitra*, and *Bhūdhara* should be built the main houses of the kings (i.e., the Kshatriyas); they are not suitable for (the houses of) the people of the other castes.

20. The eight plots of the gods beginning from *Apavatsa* are suitable for the dwelling-houses of the (other lower) castes.

21. The four quarters, namely, the east (*Indra*), etc., are suitable for the dwelling of the twice-born.

22. In the south (*Yama* plot) and the west (*Varuṇa* plot) should be the main houses of the Kshatriyas (lit., kings).

23. The west (*Varuṇa*) and the north (*Soma*) quarters are suitable for the dwellings of the Vaiśyas.

24. The south-west, north, and north-east are suitable for the dwellings of the Śūdras.

25. The north-west and the south-east are suitable for dwellings of all.

26. In the north, north-east, or the *Parjanya* quarter should be the kitchens of all.

27. The *Antariksha*, *Agni*, and *Pūshan* quarters are suitable for the wells of the (all) castes.

28. In the south or the south-west should be the dining hall of all (people).

29. In the north-west should be the house (i.e., temple) of the Brahmans to feed the gods (i.e., to worship).

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[1] For the precise position of these plots or quarters see the diagrams given under chapter VII.

30. In the *Aditi* or the *Iśa* quarter should be the house for the worship of the gods of the three (other) castes.

31. In the *Bhallāṭa* and the *Mṛiga* plots should be the quarters for the housewives of the Brahmans.

32-33. The *Gandharva, Bhṛiṅgarāja, Mṛiga,* and *Antariksha* plots are suitable for the quarters of the queens of all the kings (of nine ranks) [1].

34. In the *Pushpadanta* quarter or at its wing (*svakarṇa*) should be the barracks (*maṇḍapa*, lit., pavilions) for the soldiers (*āyudha*).

35-36. The *Varuṇa, Asura, Nāga, Mukhya, Parjanya,* and *Soma* plots are suitable for the quarters of the housewives of the Vaiśyas and the others.

37. In the *Satyaka* or the *Antariksha* quarter should be the bedrooms of all.

38. The rooms for enjoyment (lit., to fulfil one's desire) should be in the *Śesha, Asura,* or *Varuṇa* quarter.

39. In the *Soma* and *Mṛiga* quarters should be the treasury for keeping gold and jewels.

40. In the *Nāga* quarter should be the chapel for carrying out sacrificial ceremonies of the twice-born.

41 In the *Aditi* quarter should be the bath-rooms of all castes.

42. In the same place should be the office for military negotiation (*sandhi-kārya* lit., peace-making), and beyond that should be the office of espionage (of the spies, or ambassadors)

43. In the south or south-west should be the houses of the charioteers (*sūta-kāra*)

44. In the *Indra* or the *Mahendra* quarter should be the houses of the slaves (servants).

45. Farther beyond the north-east should be the houses of the guards (*chaturdhāra*).

46. The cow-sheds should be at the *Pūshan* or the *Vitatha* quarter.

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1 See chapter XLII. 2-5, p. 435.

47. The stables for conveyances (the horses, etc., *vāhana*) should be on the left side of the gate.

48. In the *Apa* or the *Apavatsa* quarter should be the pavilion for seeing the newly born baby (or the place wherefrom the *pardah* ladies can see any festival).

49. Near the *Brahmā* quarter (central plot) should be the pavilion for wedding and other ceremonies.

50. In the *Indra* or the *Indrarāja* quarter should be the dressing pavilion (*vastrāchchhādana*, lit., covering with clothes, or where the bride and bridegroom look at each other for the first time eye to eye).

51. In the *Rudra*, or the *Rudrajaya* quarter should be the house for girls (daughters, misses, *kanyakāra*).

52. The dwelling-houses of the boys (sons) should be in the *Savitra*, or the *Sāvitra* quarter.

53. In the *Mṛiga* quarter should be the pavilion for study of all castes.

54. In the quarter beyond that should the pavilion for besmearing the body with oil (before bathing).

55. To the north-east of the farthest court (boundary) should be optionally built the audience hall.

56. The house for amusements (lit., luxuries) should be thereafter built in the north (*Soma* quarter).

57. In the *Mṛiga* or the *Mukhyaka* quarter should be the houses of the fashionable people (who yield in luxuries).

58-59. In the *Pāvaka* (*Agni*), *Pūshaka*, *Satyakā*, or *Mahendraka* quarter should be the houses for the female companions (*sakhī*) ; and the houses for attendants (servants) should also be built therein.

60. On the right side of the gate should be the quarters of the police guards.

61. In the same place should also be the family quarters of the soldiers.

62. In the *Gṛiha-kshata*, or the *Yama* quarter (south) should be the houses of the queens and such other people.

63. In the *Gandharva*, or the *Bhṛiṅgarāja* quarter should be the house of those (princesses) who can be seen by the moon (but not by the sun).

64. In the *Vṛisha* quarter or in the south-west should be the houses of those (beauties) who can be seen by the sun (i.e., who can come out of the harem at day time).

65. The house of the Crown Prince should be in the *Varuṇa*, or the *Pushpa-danta* quarter.

66-67. The (main) doors of the houses of all castes should be made in particular in the *Mahendra*, *Pushpa-danta*, *Mukhya* or *Gṛiha-kshata* quarter.

68. The door in the *Mukhyaka* quarter is omitted in the houses of the kings by the ancient (architects).

69. In the *Pāvaka* (south-east) or the *Anila* (north-west) quarter should be built the pavilion for unhusking rice.

70. The granary (lit., store-house for corn) should be built in the *Nāga* or the *Mukhyaka* quarter.

71. The flower pavilion should be situated in the *Sosha*, or the *Asura* quarter.

72. At the four corners (and) the four directions is stated to be the place for the steps (*sopāna*).

73-74. In the north-west, the *Bhallāṭa* or *Nāga* quarter of all houses should be built pavilions suitable for music (dancing, etc.) of the females.

75. In the *Roga* quarter should be fittingly built the sheds for the fowls.

76. In the *Dauvārika* and the *Sugrīva* quarters should be the sheds for the sheep, etc

77-78. There should be one, two, three or four walls, for the (palaces of) kings ; there may be up to five (compound or partition) walls, or there may be two or three walls.

79. In the *Roga* quarter of the extreme boundary wall should be built the temple for every day worship.

80. The wise (architect) should build the main houses of all (people) as aforesaid.

81-82. The bath-rooms suitable for all castes, namely, the Brahmans and the three castes beginning with the Kshatriyas, should be built in the manner stated above.

83. As an alternative, the wise (architect) may build the temples of all (? people or gods) in the *Mukhya* (? main) quarter.

84-85. The difference made here between main and minor houses is due to the amount of cost of building; otherwise, in all cases, the main building should depend on the liking of the master (i.e., not on the cost, quarter, or size).

86-87. In case of other (than the extreme) walls, houses should be built in order on one side only; (similarly) there may be houses on two sides also in all other (than the extreme) walls.

88. The measurement of the wall of all houses should be made proportionate to the measurement of the court (*prākāra*).

89. At the gates should be built the gate houses beginning in order from the *Dvāra-śālā* and ending at the *Gopura*[1].

90. The gate-houses of the Vaiśyas and the Śudras may be made one, two, or three storeys high.

91 The gate-houses of the Śudras should end at the *Dvāra-śālā* (i.e., there should be only one gate-house instead of the five).

92. The main and minor houses of all kinds should be built as directed before.

93-96. As in proportion (i.e., symmetrical) to the main house (lit., abode of the master) in accordance with the rules of the science of architecture should be built the temples (*vimāna*), residences (*sadma*), all surrounding monastery-wall (*vihāra-kuḍya*), treasuries, etc., law-courts (*nīti*), stables for horses and elephants, so also should be laid out all the towns.

Thus in the *Mānasāra*, the science of architecture, the thirty-sixth chapter, entitled :

The situation and measurement of dwelling houses.

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[1] See Chapter XXXIII, 8–11, pages 305—306.

CHAPTER XXXVII

THE OPENING OF THE DWELLING HOUSE

1. Now I shall describe the ceremonies of opening the (new) houses.

2. All the *Jāti* (and other classes of) buildings should be (made) with the aforesaid features (and be opened in the same way).

3-4. Of the months of the north and the south solstices, Mithuna (May and June), Dhanus (November and December), Kanyā (August and September), and Mīna (February and March) should be avoided (for the opening ceremonies).

5-6. (On some day of the other months) of the auspicious fortnight and planet (*nakshatra*), and on some auspicious moment and constellation (*lagna*), and when the moon is both in the *sthira rāśi*[1] and in the bright fortnight, the first entry (into a new house) should be made.

7. Both the chief architect (*sthapati*) and the actual builder (or the principal assistant, *sthāpaka*) should lead the ceremonies of opening of the house.

8. In front of the house (to be opened) should be built a pavilion (*maṇḍapa*), a shed (*prapā*), or a pinnacled structure (*kūṭa*).

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[1] The *rāśi* or signs of the zodiac are divided into three classes, namely, *chara* (moving), sthira (fixed) and *ubhayātmaka* (combined); vṛisha, siṁha, vṛiśchika, and kumbha are stated to be the *sthira-rāsi*.

9-10. It should be in a line with the length of the house and measure five, seven, or nine cubits (in length), and be furnished with sixteen or twelve columns.

11. The structures of various descriptions should be adorned with various cloths and ornaments.

12. The structure thus made should be besmeared with the holy cowdung.

13-14. Inside the structure or in the courtyard (*madhya-raṅga*); at its sides or north-east corner, the ceremonies of sowing seed (*aṅkurārpaṇa*) should be optionally carried out by the architect as said before.

15. The architect should make the ordinary offerings (*bali*) inside the house (*vāstu*).

16. The master builder (*sthāpati*) should worship the eight immortals (gods) beginning with Āpa-(vatsa).

17. The chief assistant (*sthāpaka*) should make offerings to the four (gods) beginning with Ārya.

18. Brahmā and the other gods also should be worshipped as usual.

19. The sacrifice to the Spirit of the house (*Vāstu-purusha*) should then be performed for the satisfaction of the Vāstu deities.

20-21. Then the house should be purified by lighting fire on all sides of it and by washing it all through, and then the pronouncement of benediction (*puṇyāha*, lit., good day) should be made.

22-23. The master builder (*sthapati*) together with his assistants (*sthāpaka*) should wash with the five products of the cow (*pañcha-gavya*); the feet should be washed (thoroughly) with these five things separately.

24. The washing ceremonies (*āchamana*) should be performed according to rules, and then they should enter into the pavilion (*maṇḍapa*).

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[1] Five products of the cow, a liquid mixture prepared of five holy things for washing purposes.

25. A circular mark (*maṇḍala*) should be made in the square plot (*sthaṇḍila*) on the floor (*prastara*) with the holy *śāli* (grain) powder.

26-27. Nine pots should be filled with pure water; the pots should be tied around with a string and be covered with new cloths.

28. They should be furnished with cocoanut and other fruits, with bunches of holy grass and leaves.

29. Twenty-five squares (figures) should be marked and paddy (raw unhusked rice) should be spread on them.

30. The *kuśa* grass should be spread on the paddy in the order stated before.

31. Upon the paddy should be placed the nine pots beginning with that of Brahmā.

32-33. The images of gods should be made, preferably with gold, and they should be adorned with their different garments, and be worshipped with their different incantations (*mantra*).

34-35. The master and his own housewife should fast by drinking pure water (? plain milk) in the night, and then again fast during the day following.

36. Both the housewife and the master should touch the (main) column of the house with their own hands jointly.

37-38. Then the ceremonies of the safety-string (*rakshā-bandha*, binding for the sake of safety) of the riding animals of those gods and also of other chief attached animals should be performed, and benediction (*svasti*) should be pronounced.

39. The *adhivāsana* (purification) rites should be observed during the day time or the night.

40. All the germinated seeds (*pālikā*) should be placed on the square (*sthaṇḍila*) figure.

41-42. The wise architect (*sthapati*) should worship Brahmā and other gods with their own separate incantations (*mantra*) which begin with the mystic syllable *om* (*praṇava*) and end at *namaḥ*.

43. The deity of one's heart (Hṛillekhā) should be worshipped by the wise (architect) according to rules on the middle pot.

44. They (the deities) should be entertained with perfumes and flowers, and be offered incense and lamp.

45. They should be offered also milk pudding, milk and such other things, and also betel, etc.

46-47. The sacrifice with holy fire should then be performed in the square plot (*sthaṇḍila*) as also in the east, amidst dancing, singing, beating of drums, pronouncement of victory (*jaya*) and all other auspicious sounds.

48-49. In the square plot (*sthaṇḍila*) or the sacrificial pit (*kuṇḍa*) eighteen offerings (*āhuti*) should be made of each of the (following) five things: *samidh* plant, clarified butter, boiled rice, sesame seed, and fried rice.

50-51. The mystic formula of the personified Energy (*śakti-bīja*) should be pronounced beginning with *om* and ending at *svāhā*; and the finishing offering should be made with the *śakti* incantation (*mantra*), known as the *Gāyatrī*.

52. The ceremony of sprinkling water should be performed with the water of the same pot as was used for the purificatory (*adhivāsa*) ceremonies.

53-55. Amidst the pronouncement of victory (*svasti*) and all other auspicious sounds, both the architect (*sthapati*) and his assistant (*sthāpaka*) should sprinkle (this water) on the riding animals (*vāhana*, of the gods), etc., as well as on the doors of the main building (*veśma*), and on each and every house.

56-57. Then the (other) auspicious rites of the house (—opening) should be carried out by ornamenting and adorning it with various cloths, banners, flags, and decorating it with garlands of flowers.

58-60. The architect (*sthapati*) should be clad in the best dress, ornamented on the five limbs, besmeared with white sandal, decorated with gold and sacred thread, and be furnished with new white garments and a scarf across the neck and the chest (*uttarīya*).

61. He should (again) wash his feet, and perform the rite of gathering together all things.

62. Then he should offer (to the deity) incense and lamp (light) together with perfumes, flowers, and unhusked rice (*akshata*).

63. To the best of their powers the Brahmans should pronounce benediction (*svasti*).

64-65. The votary (*yajamāna*) together with his followers if he like, should circumambulate the house amidst the pronouncement of victory (*jaya*) and various other auspicious sounds.

66-67. Then standing before the door of the house or while walking round, he should salute with joined palms the goddess (of prosperity) Lakshmi and her Lord (Govinda), and pray for the boon he wishes to have.

68-69. The prayer (for asking the boon) should be as follows :--

'Oh Lakshmi, I bow to Thee and prithee to fulfil the desire of the master of the house for sons, grandsons, wealth, and long life, etc.'

70-71. After having pronounced this prayer both the architect (*sthapati*) and the assistant (*sthapaka*) should give the residue of the dishes offered to the gods to the votary (*i.e.*, the master of the house).

72-73. On the occasion of entering into the house, fees (*dakshiṇā*) together with betel should be given to the architect (*sthapati*) and his assistants (*sthāpaka*) and especially to the Brahmans.

74-79. He (the master) should circumambulate the village accompanied by them (the architects) and his own wife, taking with him rice, milk, water, various heavenly ornaments, perfumes, garlands, clothes, in the midst of the chanting of the Vedas by the twice-born, and amidst singing, dancing and music, and taking umbrella (*chhatra*), chowries, jugs completely filled with water and fees (*dkashinā*), etc., and mounting together with the friends of the votary on horses, elephants, etc., and being followed by retinues.

80. Then he should enter into the house admist all auspicious sounds.

81. Then together with friends and relations he should feed the Brahmans.

82-83. After entering into the house in this way, the master should give with his own hand clothes, ornaments, and conveyances, etc., to the assistant architects (*sthāpaka*) and others.

84-85. Then the architect (*sthapati*) and his assistants (*sthāpaka*) should say to the master: 'You are settled (lit., received) in this house,' and then should leave him.

86-89. It will be auspicious and the master will attain all desired success if he enter into the house after he has circumambulated the house together with (lit., mounting on) the vehicle (goose ?) of Brahmā, in company of those artists, elephants, horses, camels, etc., and various other retinue, various soldiers, chariots, chowries, collection of feathers, and amidst the beating of the drum (*dumdubhi*) and kettle drums (*bheri*).

Thus in the *Mānasāra*, the science of architecture, the thirty-seventh chapter, entitled:

The opening of the dwelling house.

CHAPTER XXXVIII

THE DOORWAYS

1. The situation and the characteristic features of the doorways will be described now.

2-4. In all kinds of temples of the gods, and the dwelling houses of the Brahmans and other castes, in (all kinds of) palaces (*harmya*) of the kings, and in the courts (*prākāra*), and pavilions (*maṇḍapa*) four main doors should be constructed on the four sides, and there may be as many smaller (minor) doors as one likes.

5. In the region of the corridor (lit., interspace) doors should be opened at the middle.

6. Doors should be constructed suitably at (the middle of) the walls; there is no restriction (hard and fast rules, lit., no defects) about it.

7. Doors (i.e., dormer-windows) should be suitably opened at the north-east of the roof (*prachchhādana*) of an edifice (*harmya*).

8. The water-door (or gutter) should be suitably constructed at the bottom of the wall.

9-10. In the main building (*mukhya* quarter ?) the entrance door together with two panels (*kavāṭa*) should be constructed in the south; a straight line should be drawn exactly across the middle, and at the bottom of that should be constructed (the door).

11. Of (the temples and the dwelling houses of) gods and men the great (entrance) door should be furnished with two panels.

12. The main doors should be furnished with symmetrical steps (in the front).

13. In this way, the expert (architect) should construct the doors of the edifices of the gods and others.

14. The doorways in all kinds of civil (lit., human) buildings are described (below).

15-17. The length and breadth of a house should be divided into nine parts (each; and) the great doors at the *Mahendra* quarter (in the east) of an edifice should be constructed (at the middle one of these parts); as an alternative, the (entrance) door may be constructed on the left of the middle line.

18-19. The smaller doors with lattice work should be constructed at the *Íśa*, *Parjanya*, *Aditi*, *Udita*, *Jayanta*, or *Mṛiga* quarter.[1]

20-21. The large gate should be constructed in the south at the *Gṛihakshata* quarter of the *Dvāra-śālā* (first) gate-house[2]; as an alternative, this door may be constructed on the left of the middle line.

22-23. The small doors, etc., (i.e., including windows) should be constructed as before at the *Vitatha*, *Pūshan*, *Pāvaka* (*Agni*), *Antariksha*, *Mṛiga*, or *Satyaka* quarter.

24-25. The large gate should be constructed in the west on the left of the middle line in the *Pushpadanta* quarter of the *Dvāra-harmya* (second) gatehouse.

26-28. The smaller doors and those (latticed) windows should be constructed at the *Sugrīva*, or the *Dauvārika* quarter, or in the south-west, at the *Mṛiga Bhṛiṅgarāja*, and *Gandharva* quarters, or in the north-west.

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[1] For the precise position of these quarters see the diagrams given under chapter VII.

[2] See chapter XXXIII.

29-30. Of the *Dvāra-śālā* (first) gatehouse the main door should be constructed in the north at the *Bhallāṭa* quarter, or on the left of the middle line across the length.

31-32. The smaller doors should be constructed at the *Mukhya*, or the *Nāga* quarter, or in the north-west, or the *Roga*, *Śesha*, or *Asura* quarter.

33. The four (corner) doors, namely, the *Īśāna* (north-east), etc., may be conveniently constructed in the four directions.

34-35. In all kinds of kitchens, the front (main) door should be constructed at the middle of the front side, but according to some (such) doors may be constructed on the left of the middle line.

36-38. Two, four, six, eight, ten, or twelve (large) latticed windows together with smaller lattice-work should be constructed at the region below the architrave (or beam, *uttara*) [1] for the upward passage (of the kitchen smoke).

39. The latticed doors may be opened at the middle or on the left side of the middle line.

40. The latticed doors as well as doors in rows may be constructed (for the kitchen).

41. A pair of lattices should be constructed in the kitchen of the gods (i.e., refectory).

42. The doorways opened for the upward passage (of the kitchen smoke) may be, otherwise, constructed at the south-west or the north-east.

43-44. The lattices may be otherwise opened at the back of all houses as well as the central courtyard (*raṅga*); (in such cases) the lattices should not be constructed at the middle, but on the left side of the middle line.

45. The wise (architect) should construct the latticed doors in place of (lit., like) the minor doors stated above.

46-49. In human (civil) dwellings the (entrance) door should be constructed at one of the nine parts in the length of the edifice, between the four parts on the left and five parts on the right.

[1] See the writer's *Dictionary*, page 79.

50-54. In the houses of the Brahmans and the kings (Kshatriyas) the entrance door should be constructed on the left of the middle line across the length (of the house); similarly doors should be constructed in the houses of other people also; but in the edifice (temple) of the gods, the doors should be constructed at the middle of the house, (i.e., not on the left of the middle line across the length).[1]

Thus in the *Mānasāra*, the science of architecture, the thirty-eighth chapter, entitled:

The doorways.

[1] In temples, the front doors are constructed just at the middle of the front wall so that a full view of the deity in the interior may be received by a visitor from the outside. But in residential buildings, such openness was not desired, owing to, perhaps, the eastern seclusion; and, therefore, the doors were constructed on either side of the middle line across the front.

CHAPTER XXXIX

THE MEASUREMENT OF DOORS

1. I shall state the rules regarding the door-measures: (their) details will be described now.

2-4. In the houses of the gods, the Brahmans and the other castes, (that is), in (all kinds of) dwellings, walls (*kuḍya*), gateways (*gopura*), and temples (*maṇḍapa*, lit., pavilions), the measure of all kinds of door and windows, etc., should exclude (the measurement of) the pair of pilasters (attached thereto).

5-6. The twenty-three kinds of door-height should begin from one and a half cubits, and end at seven cubits, the increment being by six *aṅgulas* (i.e., a quarter cubit).

7. The large doors are thus stated, and the smaller ones will be described here (below).

8-9. The seventeen kinds of height of the smaller doors should begin from one cubit and end at three cubits, the increment being by three *aṅgulas* (i.e., one-eighth cubit).

10-11. The thirteen kinds of height of the windows should begin from twelve *aṅgulas* (i.e., half a cubit) and end at two cubits, the increment being by three *aṅgulas* (i.e., one-eighth cubit).

12. This should be the height of the door proper; its breadth is described here (below).

13. The width of all kinds of the door proper should be one-half of its height.

14. As an alternative, (the measurement) of the main (front) door is stated in comparison with the (main) pillar of the house.

15-16. The height of such pillars being divided into eight, nine, or ten (equal) parts, the height of the door is said to be less than those parts by one.

17. And the breadth is said to be a half of that (height). Now that (door-measure) is stated in comparison with the building.

18-20. The nine kinds of height of the smallest and other types should begin from one and three-fourths cubits and end at three and three-fourths cubits, the increment being by six *aṅgulas* (i.e., a quarter cubit): thus should be constructed the main door of a building of the smallest size.

21-23. The nine kinds of height, consisting of three kinds in each of the smallest and the other (i.e., the intermediate and the largest) types, should begin from two cubits, and end at four cubits, the increment being by six *aṅgulas* (i.e., a quarter cubit): thus should be the height of the main door of a building of the intermediate size.

24-26. The nine kinds of height of the smallest and the other types should begin from two and a half cubits, and end at four and a half cubits, the increment being by six *aṅgulas* (i.e., a quarter cubit): this is said to be the main door which should be attached to the building of the largest size.

27. These are the twenty-seven kinds of (the door) height; the breadth should be one-half of the height in each case.

28. This is said to be (the measure of the main door) in the buildings of the *Jāti* class; that (i.e., the door measures) of the buildings of the *Chhanda* and the other classes will be described (now).

29-30. The width of the (main) door of (a building) of the *Chhanda* class should begin from twenty-five *aṅgulas*, and end at one hundred and twenty-three *aṅgulas*, the increment being by two *aṅgulas*.

31-32. The breadth of the door of (a building of) the *Vikalpa* class should begin from twenty-one *aṅgulas*, and end at one hundred and twenty-one *aṅgulas*, the increment being by two *aṅgulas.*

33-34. The breadth (of the door of a building) of the *Ābhāsa* class should begin from nineteen *aṅgulas*, and end at one hundred and eleven *aṅgulas*, the increment being by two *aṅgulas*.

35. The height (of the door) should be twice its breadth : this is said to be the common (rule) in each case.

36-37. As an alternative, it (the height) may be greater than twice (the breadth) by one-fourth, or one-half; (another alternative being that) the height of the door should be of nine parts, while the breadth is of five parts.

38. The application of the rules of the six formulas known as *āya*, etc., (in regard to door-measure) will be described now [1].

39. All the (six) formulas beginning with *āya* should be considered with regard to the door-height of the *Jāti* class of buildings.

40. But the *āya* and all other formulas should be considered with regard to the breadth (of the door) in all other classes of buildings beginning with the *Chhanda*.

41. The increment (i.e., multiplication), and decrement (i.e., division), etc., in regard to all (the formulas concerning the door-measure) should be the same as said in connection with the storeyed buildings [2].

42-43. It is auspicious to make doors of the smallest measurement in the buildings of the smallest size, of intermediate measurement in the intermediate buildings, and of the largest measurement in the largest buildings.

44-46. If the measure (of the door) be too small or too large, that is, the smallest door in the largest building, or the largest door in the smallest building, or the intermediate door in those two (the smallest and the largest), or those two doors in the intermediate

[1] For details see chapter IX, etc., and the writer's *dictionary*, page 600.

[2] See chapter XXX, pages 168—194, 285 and 286.

type of buildings: all these would be ruinous to all prospects of the people of all castes.

47-48. The *Sāntika* and other heights[1] should be made for doors as in the case of buildings; this being done it would be fruitful for health, longevity of life, fruition, and happiness.

49. If the reverse be done, it would cause misfortune to the kings and others.

50. Thus is described the measurement of the door; the pillars, etc., (thereof) will be described now.

51-52. By the sides of the door proper should be attached pillars of the same height as of the door; otherwise the attached pillar may extend up to the top of the storey or the architrave[2].

53. Two holes should be made at the bottom and top each, of the door-joint (between the long style and the frame).

54. At the bottom and top of the two styles (*paṭṭikā*, fillet) the door should be furnished with pointed projection (*śikhā*).

55. Thus is described the wooden door whereof a portion (i.e., the base) should be of stone.

56-60. The door at the (boundary) wall should be of twelve parts; along the middle of its outer area of five parts by seven parts in the interior the width of the meeting style (lit., door-joint) should be three, four, five, six, seven, (or) eight of those parts; a half of that should be its projection, or it (the projection) may be made equal to the width or three-fourths of it.

61. The length, breadth, and thickness of the long style (*paṭṭikā*) should be proportionate to the door.

62. There should be two meeting styles (door-joints) or two long styles (*paṭṭikā*).

63. It (the door) should be quadrangular (i.e., rectangular) or square, and be adorned with ornaments (mentioned below).

64. The measure of thickness at the upper portion of the meeting style (lit., joint) should be of nine parts by the outside.

[1] Including *paushṭika*, *jayada*, *sarvākamika* or *dhanada*, and *adbhuta* (compare chapter XXXV, pp. 21 to 25, and the writer's *dictionary*, pp. 82 and 83).
[2] Compare lines 15 and 16.

65-66. The long style (*paṭṭa*) at the end of the wall (*kuḍya*) should be of four parts, of which two parts should be the band (*bandhana*); the short style (or fillet, *kampa-paṭṭa*) should be one part and it should be attached at the region of the band (*bandha*).

67-69. As an alternative, the long style (*paṭṭa*) may be of one part, the lotus inside it should be of half a part, the short style (*kampa*) should be made of half a part, and the corner band is stated to be of one part. The lotus is (generally) fixed at the centre, but it would be immaterial if it be attached at the end.

70. The outer long style (*paṭṭa*) should be one part, when the portion (lit., limb) at the bottom (lit., ground) should be of two parts.

71. The lotus (*padma*) should be of two parts, and the short style (*kampa*) of one part.

72. The middle (i.e., at the meeting style) the base should be two parts, and the external lotus (also) two parts.

73-74. On the outer side of the long style (*paṭṭikā*) joint there should be (left) one part round the door; or there should be some ornament, otherwise the long style (*paṭṭikā*) alone should be made.

75-76. The (recessed) portion at the corner in width of the meeting style may, otherwise, be double; the base and top of the meeting style should be raised (lit., high), and the (lotus) buds should be arranged at the top.

77. It (the door) should be adorned with all ornaments, and decorated with leaves and creepers.

78-79. Covering the upper and middle portions (of the door) the (image of the) supreme king should be arranged; on its sides should be the retinue, at the end of which should be carved a pair of elephants.

80. On the right (leaf) should be made (the image of) Gaṇeśa (the God of success), and on the left (that of) Sarasvatī (the Goddess of learning).

81. It should be furnished with the umbrella and the chowry, and adorned with arches and other ornaments.

82. At the bottom it should be decorated with pitchers (as if) full of water, and with mirrors

83. This should be always made for the sake of security and as a source of prosperity.

84. As an alternative the width of the meeting style (lit., door-joint) will be specified now.

85-88. The width of the meeting style should begin from three four, five, or six *aṅgulas*, and be increased by two *aṅgulas* to twenty-one, twenty-two, twenty-three, twenty-four, or up to twenty-five *aṅgulas*.

89-90. Or the width of the smallest, (the intermediate and), up to the largest types, should begin from one cubit and end at three cubits, the increment being by three *aṅgulas*.

91. The expert (architect) should make the door with wood or stone.

92. The smallest breadth should be (more) suitable for the width of the meeting style in all cases.

93-94. This measurement of the door should be applied in buildings (of all castes); this may also be applied in temples of gods; there is no restriction (lit, defect) about it.

95. The measurement of the door should be made together with (i.e., including) the door-ornaments.

96. The length and width of the door-leaf (*kavāṭa*) should be proportionate to the length and width of the door.

97. The thickness of the leaf should be one, two, three, four, or five (i.e., one-fifth part of the width).

98. One or two leaves should be symmetrically attached thereto (i.e., to the door).

99. A pair of wood is unsuitable; therefore, a single piece of wood should be used (for the door-leaf).

100. When there are two door-leaves, two single pieces of wood should be used.

101-102. The right leaf should be wider in breadth and the left leaf should be less by one, two, or three *aṅgulas*.

103-104. The whole of that (difference between the two leaves) should be the (measure of the) width of the cupola-like termination, and its height should be double of it (the width); all the cupola-like terminations should be round in shape, and should be tapering like the female-breast from the root upwards.

105-110. The door-frame should inwardly end at (i.e., but against) the door (leaf) proper; the width of the frame should be inwardly three, four, five, or six *aṅgulas*; along the length of the leaf the width of the frame may be made greater by two, four, six, eight, ten, or twelve parts; otherwise the (same) width (preferably) should be made three, four, five, or six *aṅgulas*; (thus) it should be made (of the same measure) along the length and width of the door (leaf) proper.

111-112. The mullion (*āya-daṇḍa*) should be made three, five, or seven series; this should be symmetrically made in all the large and small ones (i.e., doors).

113-114. In all (doors) the lotus, leaves, etc., should be gracefully ornamented covering one-fourth of the quadrangular panels within the (four) joints.

115. The large door as well as the small door at the enclosure (wall, *prākāra*) should be furnished with two leaves (*kavāṭa*) each.

116-119. The length (of the nail-socket) should begin from seven *aṅgulas* and be increased by two *aṅgulas* to twenty-five *aṅgulas*; the width should be three or four *angulas*; a half of that should be made its thickness, and its height should be three, four, or five *aṅgulas*; thus is described the nail-socket. The nail (itself) will be described (now).

120-121. The length of the nail (*kīla*) should be equal (i.e., proportionate) to the length of the socket, and the width of the nail should be, according to one's liking, one, two, or three *aṅgulas*.

122-123. If there be a single pair of leaves the nail-socket should be fixed on the right side of the door (leaf) as well as at the foot of the door.

124. There should be fixed knobs (*parvan*) at the bottom and top of the nail, and holes at the socket.

125. The iron nail and the long style (*paṭṭa*) should be adorned with lotuses and leaves, etc.

126. Two nail-pikes (*kīla-śūla*) should be fittingly made for all the leaves (*kavāṭa*).

127. The wise (architect) should make them sufficiently strong and graceful.

128-129. On the upper part of the door (leaf) as well as on the lower half attached to the base the long styles should be furnished with holes, and the upper pike of the leaf (*kavāṭa*) should be driven into those holes.

130-131. For the inside doors (i.e., other than those on the enclosure wall) there may be fitted one leaf, the nail, and the socket, as also two leaves.

132-133. At the middle of the length and width of the leaf there should be a pair of holes, and in each of those holes the nails should be driven from upwards.

134. In this way leaves should be fittingly attached at the right and left.

135. For the main temples of the gods the left leaf should be of larger size[1].

136. In case of the residential buildings of all people the wise (architect) should make the edge (of the door-leaf) according to one's liking.

137. Thus should be made the door by the architect (*sthapati*) with the help of his assistants (*sthāpaka*).

138. In all kinds of divine buildings (i.e., temples) the middle door should be furnished with lattice-work.

139. In the buildings of the twice born and the other castes the wise (architect) should furnish (with lattice) the windows (not the doors).

140-141. In all kinds of buildings of the gods, the Brahmans, and the other castes, mullions of the fitting shape and as desired should be made at the middle.

[1] Compare lines 101 to 104 above.

142. The characteristic features and measurement of the door-style (*paṭṭikā*) will be stated now.

143-144. The door-style should be furnished with panels at the middle of the front side (of the leaf) with projection of one or two parts (from the face of the leaf).

145. The width of the door-style (*paṭṭikā*) should be one, three, or five parts.

146-147. The height of the door-style should be twice, one-and-three-fourths, or one-and-a-half of the width.

148-152. The height (of the door) being divided into eight parts, the lintel (*masūraka*) should be one part; twice that should be the height of the pillar (or the base, lit., foot), and a half of that the height of the entablature (*prastara*); equal to that should be the height of the neck (*grīva*), and the height of the cupola-like termination (*śikhā*) two parts; one-half of that should be the height of the dome (*stūpi*) and the head (*śiras*) should be shaped like a hall (*śālā*), or together with the wall (*bhitti*) it should be shaped like the nose (*nāsikā*).

153. Thus is described the assemblage of six members; the assemblage of four members (of the door) will be described now.

154-155. The height (of the door) being divided into six parts, the base (*vedikā*) is said to be of one part, the pillar (*pāda*) two parts, the head (*śiras*) two parts, and the cupola (*śikhā*) the rest (i.e., one part): these should be made as aforesaid.

156-157. The ancient (teachers) said that those (members) should be adorned with all ornaments; if the reverse be done through ignorance, it would ruin all prosperity.

158-161. If the doors be made in proper places and with measurement mentioned above, in the buildings of the gods, the Brahmans, the Kshatriyas, the Vaiśyas, and others, it would be the source of all prosperity.

Thus in the ***Mānasāra***, the science of architecture, the thirty-ninth chapter, entitled:

The measurement of doors.

CHAPTER XL

THE ROYAL PALACES.

1. The characteristic features of the palaces of the kings (of various ranks) will be described now.

2-7. (The breadth) of the palaces of all classes of kings, of three sizes each, namely, the smallest and others (i.e., the intermediate and the largest) types, is said to begin from one hundred and eighty-one *daṇḍas* (of four cubits each) and end at two hundred and one *daṇḍas*, the increment being by two *dandas*: their breadth is thus stated. The length (thereof) will be stated now it (the length) should be greater than the breadth by one-fourth, one-half, three-fourths, or twice the breadth.

8-12. It (the breadth) should begin from one hundred and sixty -nine *daṇḍas* and end at one hundred and eighty-one *daṇḍas*, the increment being by two *daṇḍas*; these are the nine kinds consisting of three types, beginning from the smallest and ending at the largest (including the intermediate) : the width of the palace of the *Mahārāja* (class of kings) is thus described; the length (thereof) in all cases should be made greater than the breadth as (i.e., in accordance with the proportions) stated before.

13-16. The nine kinds (of breadth) consisting of three types, the smallest, (the intermediate and the largest), are said to begin from one

hundred and fifty-three *daṇḍas* and end at one hundred and sixty-nine *daṇḍas*, the increment being by two *daṇḍas*: thus are described all varieties of breadth of the palace of the *Narendra* (class of kings).

17-19. The nine kinds of (breadth consisting of) the smallest and other types should begin from one hundred and thirty-nine *daṇḍas* and end at one hundred and fifty-(five) *daṇḍas*: thus is described the breadth of the palace of the *Pārshṇika* (class of kings).

20. In all cases the length should be made greater than the breadth as (i.e., in accordance with the proportions) stated before.

21-23. The nine kinds (of breadth) as before (i.e., consisting of three types, the smallest, etc.,) should begin from one hundred and twenty-three *daṇḍas* and end at one hundred and thirty-nine *daṇḍas*, the increment being by two *daṇḍas*: this should be the breadth of the palace of the *Paṭṭadhara* (class of kings); the length (thereof) should be as (i.e., in accordance with the proportions) stated before.

24-26. The nine kinds (of breadth) of the smallest and other types should begin from one hundred and seven *daṇḍas* and end at one hundred and twenty-three *daṇḍas*, the increment being two *daṇḍas*: this should be the breadth of the palace of the *Maṇḍaleśa* (class of kings); the length (thereof) should be made as (i.e., in accordance with the proportions) said before.

27-29. The nine kinds of breadth should begin from ninety-one *daṇḍas* and end at one hundred and seven *daṇḍas*: thus should be (the breadth) in the palace of the *Paṭṭabhāj* (class of kings); the length (thereof) should be as (i.e., in accordance with the proportions) said before.

30-33. The nine kinds of the aforesaid measure (i.e., the breadth) should begin from seventy-five *daṇḍas* and end at ninety-one *daṇḍas*, the increment being by two *daṇḍas*: this should be the breadth of the smallest and other types in the palace of the *Prāhāraka* (class of kings); the length (thereof) should be increased up to twice the breadth as (i.e., in accordance with the proportions) stated before.

34-37. The nine kinds of (breadth consisting of) the smallest and other types are said to begin from fifty-nine *daṇḍas* and end at seventy-five (*daṇḍas*), the increment being by two (*daṇḍas*): thus should be (the breadth) in the palace of the *Astragrāha* (class of kings); the length (thereof) should be as (i.e., in accordance with the proportions) stated before.

38. There should be one to seven courts (*sālā*, lit., wall) in the palace of the *Chakravartin* (class of kings).

39. (One to) six courts (*prākāra*) should be made in the palace of the *Adhirāja* (class of kings).

40. There should be one to five courts (*sālā*) in the palace of the *Narendra* (class of kings).

41. There should be up to four (courts) in the palace of the *Pārshṇika* (class of kings).

42. There should be one to three courts (*sālā*) in the palaces of the three (classes of) kings beginning with *Paṭṭadhara*, (i.e., including the *Maṇḍaleśa*, and the *Paṭṭabhāj*).

43. There should be one to two courts (*kuḍya*, lit., wall) in the palaces of the *Prāhāraka* and the *Astragrāha* (classes of kings).

44-48. The innermost court (*sālā*) should be of one part, and the second of three parts; the third (court) should be of seven parts, and the fourth of thirteen parts; the fifth (court) should be of twenty-one parts, and the sixth of thirty-one parts; and the seventh (court) should be of three parts more (i.e., thirty-four parts), or of forty parts thus should be made the (proportionate) width (of the seven courts); the length should be as before (i.e., in accordance with the usual proportions).

49-50. If some (i.e., when a certain) specified measure in *daṇḍas* (of four cubits each) be given to the innermost court, the measure (of the other courts) up to the seventh court should be increased in accordance with the aforesaid (proportions).

51. These measures of the courts may exclude or include the (measure of the boundary) wall (*bhitti*).

52–53. Thus the wall should be erected internally, and always externally; the wall should also be erected on the back side; the measurement (of them) will be described in order.

54. Beyond the aforesaid dimensions the (boundary) wall should be erected all round.

55–58. The width of the (partition) walls between the courts from the first (i.e., the innermost) to the seventh is stated to begin from one *daṇḍa* and end at four *daṇḍas*, the increment being by half a *daṇḍa*; but according to some, the increment should be by one cubit (i.e., a quarter *daṇḍa*) and the seven varieties of width should end at two *daṇḍas* and a half.

59–61. The height of the rampart (*vapra*) beyond (the wall) should be equal to its width or greater by one-fourth, one-half, three-fourths, or twice the width.

62–63. The width of the rampart (*bhitti-gṛiha*, wall-house, support of the wall) should taper gradually from bottom to top, the width at the bottom being seven or eight parts. and decreasing (upwards) by one part.

64–67. The top of the enclosure (wall, *prākāra*), of which the distance (from the rampart) at the bottom should be one cubit, should be at a distance of six, eight, or twelve *aṅgulas* (from the top of the rampart); both the bottoms (of the enclosure wall and the rampart) should be fittingly fixed.

68. The rampart (lit., wall, *bhitti*) should be made of stone, brick, or earth.

69–71 As an alternative (to the rampart), a ditch (lit., water-wall) may be made butting against the (enclosure) wall, where a pavilion-like structure (should be made); this structure is made with the intention of supplying a shelter to the guards, etc.: this (guard)-house should be of suitable dimensions; its width is also stated (to be of suitable measure).

72. The *Parama-śāyika* plan should be marked in all the courts (*sālā*).

73-74. Leaving out the *Brahmā* plot at the centre, in all the surrounding quarters should be constructed the dwelling houses of kings, and all other desirable people.

75-76. In the *Indra* (east), or the *Varuṇa* (west) quarter should be built the palace of the *Śārvabhauma* (class of kings); or it should be in the *Arya* quarter, or in the four principal or intermediate quarters.

77. The palace of the *Adhirāja* (class of kings) should be built in the *Yama* (south) and the *Vivasvat* quarters.

78. The palace of the *Narendra* (class of kings) should be built in the *Bhūdhara* or the *Kubera* quarters.

79-80. The palace (lit., house) of the *Pārshṇika* (class of kings) should be built in the *Indra* or the *Indrajaya* quarters; or this may be built in the *Pushpadanta* quarter.

81-82. The palace (lit, house) of the *Paṭṭadhara* (class of kings) should be built in the *Rudra*, *Rudrajaya*, *Asura*, or *Soshaka* quarter.

83-84. The palaces of the *Maṇḍaleśa* and the *Paṭṭabhāj* (classes of kings) should be built in the *Gṛihakshata*, *Savitra*, or *Sāvitra* quarter.

85-86. The palaces (lit., houses) of the *Prāhāraka* and the *Astragrāha* (classes of kings) should be built in the *Apavatsa*, *Āpavatsa*, *Mṛiga*, or *Mukhyaka* quarter.

87-88. The palaces of all classes of kings may be laid out in the four plans beginning with the *Sthānīya*[1] as has been recommended by the ancient (architects).

89. All the main palaces should have their (main) door towards the east.

90-91. The residences for the queens of the various classes of kings should be situated to the south, the north, the south-west, or the north-west of those main palaces.

92. The coronation hall, etc., should be situated to the south of the main palace.

93. The arsenal (lit., house for storage of weapons) should be situated in the *Sugrīva*, or the *Pushpadanta* quarter.

[1] Including the *Deśya*, *Ubhaya-chaṇḍita*, and *Bhadra* (see chapter VII, page 84).

94. The (ordinary) store-house should be situated in the *Asura* or the *Śoshaka* quarter.

95. The treasury and the house for the storage of (valuable) clothes should be separately situated in the *Varuṇa* (west) or the *Nair-ṛita* (south-west) quarter.

96. The houses for keeping jewels and gold, etc., should be situated in the *Soma* (north) or the *Mukhyaka* quarter.

97. The house for the storage of ornaments should be optionally in the *Gandharva* or the *Bhriṅgarāja* quarter.

98-99. The dining hall should be situated in the south or south-west, as well as in the north-east, where should also be situated the kitchen.

100. The tank should be dug in the north-west or the south-west.

101. To the north of the queen's residence should be situated the house for the queen's guards (*kañchuki*, attendants on the women's apartment).

102. The flower pavilion should be constructed to the north-east of the *Kubera* quarter.

103-104. The bath-house should be situated in the *Aditi* or the *Udita* quarter; beyond that should be built the pavilion for washing purposes (lit., cleansing the body).

105. The maternity house[1] should be situated in the north-west or the south-west.

106. The houses for male and female servants (? slaves) should be situated in the *Pūshan* or the *Vitatha* quarter.

107. The bed-chamber (sleeping apartment) should be situated in the *Gṛiha-kshata* quarter.

108. The house for the court ladies (*vilāsinī*, lit., fashionable ladies) should be situated in the *Mukhya* or the *Bhallāṭa* quarter.

109. The house of the royal palanquin-bearers[2] should be situated in the *Dauvārika* quarter.

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[1] Where a mother is confined for about a month subsequent to her having given birth to a child.

[2] Compare chapter IX. 38, page 75, note 3.

110. The stables for horses and elephants, etc., should be built on the left side of the gate.

111. The guard-house for the watchmen (police) should be situated on the right side of the gate.

112. The house for the barber should be built in the *Satyaka* or the *Antariksha* quarter.

113. The carriage-sheds (lit., houses for keeping carriages in) should be built in the *Bhṛiśa* quarter; and the rest should be arranged as stated before (i.e., by the ancient architects)[1].

114. The (arrangement of houses within the) innermost court is thus described; (that of) the outer courts will be described here.

115. The palace of the crown-prince should be built in the *Varuṇa* quarter (west).

116. To the east or the north of that should be the quarters for his servants.

117—118. The audience-hall should be built in the south, the north, the north-west, or the south-west, or to the north-west of the tank.

119. To the left or the south of the *Nāga* quarter should be laid out the pleasure garden (orchard).

120. Beyond that should be laid out the flower-garden in the *Mukhya* or the *Bhallāṭa* quarter.

121. Beyond those should be constructed the dancing hall, and the various courtyards for dancing.

122. Temples for one's own (personal) worship as well as for the public (lit., votaries, *yajamāna*) should be built in the north-east.

123. The house for the priest should be built to the south of the palace in the second court (of the palace).

124. The house for the chanting of the sacred literature should be built in the *Roga*, or the *Mukhvaka* quarter.

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[1] That is, following the ancient custom, and the comfort and convenience of the master.

125–126. On the outer side of the second enclosure wall should be (opened) its (main) gate; to the right of that (gate) should be situated the great armoury together with dragon-like door-guards on the outside.

127. The cow-sheds should be built in the *Iśa* quarter (north-east) with doors towards the *Mahendra* quarter (east).

128. On the either side of those should be built houses for rams; and the monkey-house should be situated in the *Satyaka* quarter.

129. The stable for horses should be built in the area from the quarter of *Soma* (north) to the quarter of *Iśāna* (north-east).

130. The stable for the elephants should be built (in the region) from the quarter of *Yama* (south) to the quarter of *Pāvaka* (south-east).

131. Therefrom up to the quarter of *Nair-ṛita* (south-west) should be the place for the fowl-house.

132. The houses for the deer and other animals should be situated in the region from the north-west to the *Mukhya* quarter.

133. The bird-sheds should be built in the *Sugrīva* and the *Pushpadanta* quarters.

134–135. An elevated platform (*vedi*) together with a courtyard for security from accident should be constructed beyond the north or in the north as well as the north-west.

136. Around that should be erected a fence of pointed pikes (*śūla-kampa*) with doors in the south and the north.

137–138. To the west of those should be situated the pavilion (*maṇḍapa*) to see a fight from; this pavilion should be fittingly constructed so that ascending on it (i.e., on an elevated ground) one can conveniently see (the fight going on below).

139. The shed for the ram-fight should be built in the *Varuṇa* (west) or the *Pushpadanta* quarter.

140–143. The pavilion for the cock-fight should be erected in the *Mṛiga* or the *Bhṛiṅgarāja* quarter; the courtyard of that pavilion should be fenced around by the interior; its width from end to end (lit., from bottom to top) should be one, two, three, four, or five cubits, and its depth (i.e., the height) should be two and a half cubits; it should be furnished with (cross) bars one and a half cubits (long).

144. The house for the peacocks should be built in the *Dauvārika* quarter.

145. The house for the tigers should be built beyond the right side of the gate.

146. Outside that should be built the temples and houses for the hunters.

147. The house for the secret residence should be situated in the *Vitatha* quarter of the third court.

148. In the *Yama* (southern) quarter of the fourth court should be the war office (lit., the hall for discussing peace and war).

149-151. To see the marching of (lit., mounting on) horses, elephants, and vehicles a pavilion should be built in the south, the west, the north, or the east of the sixth or the seventh court.

152. The theatre hall (*raṅga-maṇḍapa*) should be built in the *Iśa* (north-east), or the *Vitatha* quarter.

153. The prison should be constructed in the *Bhṛiśa*, or the *Antariksha* quarter.

154. On the four sides of the court (*prākāra*) should be opened doors and gateways (*gopura*).

155. The rest should be made as said before (by the ancient architects) in accordance with the liking of the king in particular.

156. The unspecified pavilions (numbering) up to sixteen should be discreetly (constructed).

157. In the central (*Brahmā*) quarter should be erected an altar (*Brahmā-pīṭha*) together with a surrounding pavilion (temple).

158-161. The broad wall of the central altar, of the square or triangular shape, on each side, should be five, seven, or nine cubits (in height); the altar (*Brahmā-pīṭha*) installed in the centre of a village or of a royal palace is always worshipped like the *Trikāla* (Śiva, the personified three times, namely, past, present, and future).

Thus in the *Mānasāra*, the science of architecture, the fortieth chapter, entitled :

The description of the royal palaces.

CHAPTER XLI

THE ROYAL ENTOURAGE

1. All the different sections of the entourage of all the kings will be described now.

2-4. A king should study the four Vedas together with their six branches (*aṅgas*, namely, *śikshā*, *Kalpa*, *Vyākaraṇa*, *Nirukta*, *Chhandas*, and *Jyotisha*) in order; he should be proficient in all sciences beginning with the military science, including archery and politics (*mantra*), etc.; he should equally (know) the six systems of philo sophy; and he should undertake (new ventures) after (due) initiation.

5. He should be brave and resolute (*dhīroddhata*), moderately sportive (*dhīralalita*), and majestic, proud and generous (*dhīrodātta*).

6. He should personally know (the strength of) his kingdom, comprising resources and allies, etc., and personally conduct the business of government.

7. He should be a warrior himself, highly experienced, rich in resources, conversant with laws, and very strong in morals.

8-9. These are said to be the special and common qualifications of all the kings; these jewel-like (precious) qualifications are indispensable for all (classes of) kings.

10-12. He is known as the *Astra-grāha* king who has an army consisting of five hundred horses, five (hundred) elephants, and fifty

thousand foot soldiers (lit., retinue), of whom he should be the chief commander himself, and five hundred beautiful court ladies, and one queen.

13-15. That (class of kings) is known as the *Prāhāraka* who overlords the enemy with forts containing an army six hundred strong in (horses and) elephants and a standing force of a hundred thousand foot soldiers (lit., retinue) of whom he should be the chief commander himself, and possesses seven hundred beautiful court ladies, and two queens.

16-18. The *Paṭṭabhāj* (class of kings) is known to possess eight hundred horses of good breed, seven (hundred) elephants, an army of one hundred and fifty thousand foot soldiers (lit., retinue), one thousand beautiful court ladies, and three queens.

19-21. The *Maṇḍaleśa* (class of kings) possesses one thousand horses, ten (hundred) elephants, an army of two hundred thousand foot soldiers, a thousand and five hundred beautiful court ladies, and four queens.

22-24. The *Pattadhara* (class of kings) is known to possess one thousand and five hundred horses, twelve (hundred) elephants, an army of two hundred thousand foot soldiers, two thousand beautiful court ladies, and five principal queens.

25-27. The (class of) king called the *Pārshṇika* possesses two thousand horses, fifteen (hundred) elephants, an army of four hundred thousand foot soldiers, three thousand beautiful court ladies, and six queens.

28-29. The *Pārshṇika*, *Paṭṭadhara*, *Maṇḍaleśa*, and *Paṭṭabhāj*: these (classes of kings) should get the commanders-in-chief of their respective army from nine islands (?foreign countries).

30-32. The *Narendra* (class of kings) is said to possess over ten thousand horses, many thousand elephants, an army of one hundred *lakh* (100,00,000) foot soldiers, fifty thousand court ladies, and ten queens; for the *Narendra* (class of kings) also (the chief army-commander) should be secured from a foreign country (lit., island).

33-36. The king named *Adhirāja* should possess one *crore* (*koṭi*, 100,00,000) horses, ten thousand elephants, an army of ten *crores* (*koṭi*, 10,00,00,000) foot soldiers, ten *lakh* (10,00,000) *maraṇyā* (women ready to die with the king), and one thousand queens; and the commander-in-chief should be (secured) as stated before (i.e., from a foreign country).

37-43. And lastly one who is the lord like Indra (the king of gods) in regard to (the number of) his chief consort; whose lotus-like feet are saluted by the brother (subordinate) kings; whose elephants, horses, foot soldiers, court ladies, and courtesans (respectively) number one *arbuda* (1,00,000,000), one *nyarbuda* (10,00,000,000), one *mahāśaṅkha* (10,00,000,000,000), one *padma* (10,000,000,000,000), and [ending at the court girls numbering] one *parārdha* (10,000,000,000,000,000,000)[1], whose commanders-in-chief are stated (to be appointed as before): who rules without any rival over the whole earth girdled by the seven oceans; therefore he is known as the *Chakravartin* (universal monarch) because of his possession of the whole empire.

44-45. They should, according to rule, study the four Vedas together with the six systems of philosophy; they must be specially conversant with the science of peace (*sāma-śāstra*) and all other sciences, and be self-possessed, and religious.

46-47. They should be brave and generous, very charitable, prosperous, wealthy, and majestic; they must know the polity (*nīti*), be the protector of the people, and have ready (lit., unearned) money for (improving) the public places, etc.

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[1] The units are ordinarily divided into twenty, namely, *eka*, *daśa*, *śata*, *sahasra*, *ayuta*, *laksha* or *niyuta*, *prayuta*, *koṭi*, *arbuda*, *brinda* or *nyarbuda*, *kharva*, *nikharva*, *śaṅkha*, *padma*, *para*, *samudra*, *madhya*, *antara*, *apara*, and *parārdha*.

The various authorities slightly differ in these technical names. For further details see the writer's *Dictionary*, page 10, and also his article, *Hindu system of measurement*, in the *Allahabad University Studies*, vol. II, pp 13-77.

48-49. They should personally know everything, (specially) protect the Brahmans, should kiss like a bee the lotus-like feet of the preceptor, and be happy; they should possess peace of mind, thirst for glory, taste for æsthetics, and be masters of the science of music (*gandharva-śāstra*).

50-51. All (classes of) the kings should possess all these qualities (expedients) beginning from pacific measures[1] as stated by the wise; all those aforesaid qualities should be possessed by all the kings including even the inferior ones.

Thus in the *Mānasāra*, the science of architecture, the forty-first chapter, entitled:

The description of the royal entourage.

[1] The four expedients are known (Manu, VII. 107, 109), as *sāman* (conciliation), *dāna* (bribery), *bheda* (dissension), and *daṇḍa* (punishment by open attack). Some authorities add three more, namely, *māyā* (deceit), *upekshā* (trick or neglect), and *indra-jāla* (conjuring).

CHAPTER XLII

THE ROYAL ORDERS AND INSIGNIA

1. I shall now describe in detail the special royal orders and insignia.

2-5. The *Chakravartin*, *Mahārāja*, *Narendra*, *Pārshṇika*, *Paṭṭadhara*, *Maṇḍaleśa*, *Paṭṭabhāj*, *Prāhāraka*, and *Astragrāha*: these are the nine ranks of kings (in descending order).

6-10. He who is powerful, and has extended his kingdom up to the four oceans; (thus) being victorious lives (in a palace) having a (victory) bell in front of the gate; who is moderately strict in his judgment of right and wrong; who is the most famous and the best among the prosperous, and the protector of the people with kindness; and who is respected by all (other) kings: such a universal monarch is known as the *Chakravartin* (emperor, universal monarch).

11-13. That king is known as the *Adhirāja* (*i.e.*, *Mahārāja*) who assumes with his three-fold royal powers[1] the lordship of seven

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[1] The three-fold powers consist of majesty (*prabhāva*), energy (*utsāha*), and counsel (*mantra*). (See *Amarakosha*, 2, 8, 1, 19).

kingdoms; who is aware of the six royal policies[1], possesses six (kingly) strengths[2], is versed in politics and ethics, and is born of the solar or the lunar race.

14-17. That king is described as the *Narendra* who rules over three kingdoms conquered with his three-fold powers[3] from the weak; who is paid homage to by the (inferior) kings called the *Pārshṇika*, the *Paṭṭadhara*, the *Maṇḍaleśa*, and the *Paṭṭabhāj*; who possesses the eyes of a statesman; and who is the subduer of his enemy, does good deeds, and remains engaged in festivities.

18-20. That king is known as the *Pārshṇika* who is the lord of one kingdom, keeps one fort, possesses the six strengths[4], is wise, knows the opportune time (of warfare), is skilful in (three-fold) actions[5], and is acknowledged as such by others (i.e., his subordinate kings), as their suzerain.

21-24. He who possesses the four out of the six qualities[6], is the lord of half a kingdom, master of one fort, is powerful through the chiefs (lit., lords) and the ministers, and is acknowledged as their superior (lit., left alone) by the *Maṇḍaleśa*, the *Paṭṭabhāj*, and the other kings (i.e., the *Prāhāraka* and the *Astragrāha*): such a king possessing all those qualifications is called by the title of *Paṭṭadhara*.

25-26. That king is known as the *Maṇḍaleśa* who is the lord of half a province included in one whole province (*maṇḍala*), and is paid

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[1] The six royal policies or measures (according to Manu, VII, 100) comprise alliance, war, marching, halting, dividing the army, and seeking protection. According to another interpretation these refer to six qualities consisting of valour, energy, firmness, ability, liberality, and majesty.

[2] The six strengths consist of chiefs (*svāmin*), ministers (*amātya*), friends (*suhṛit*), funds (*kośa*), kingdom (*rāshṭra*), and forts (*durga*). (See *Amarakosha*, 2, 9, 1502).

[3] See note 1, page 436.

[4] See note 2 above.

[5] The three-fold actions are known (*Amarakosha*, 3, 4, 2301) as *pratyut-krama* (preparation for war, mobilization), *prakrama* (array), and *upakrama* (advance).

[6] See note 1 above under lines 11-13.

homage to by the *Paṭṭabhāj* and the other kings (i.e., the *Prāhāraka* and the *Astragrāha*).

27-28. That king is known as the *Paṭṭabhāj* who is the lord of a part of a province (*maṇḍala*), and is prosperous, who keeps one fort, and rules over good and rich people.

29-32. That king is known as the *Prāhāraka* who has these characteristics: that he is born of one of the Brahman, the Kshatriya, the Vaiśya, or the Śudra caste, keeps one fort, is the lord of many localities, rules over good people, and possesses all kinds of defence.

33-35. That (petty) king is described as the *Astragrāhin* who is the master of many localities, the lord of one city, is powerful, keeps one fort, is the only chief of many localities without any rival, and who has conquered the weaker powers.

36-39. The *Chakravartin*, *Adhirāja*, *Narendra*, and *Pārshṇika* (classes of kings) should wear a crown indiscriminately, and the *Paṭṭadhara* a diadem (*paṭṭabandhana*); the *Maṇḍaleśa* should also have a diadem (*paṭṭa*) (as his crown), as well as the *Paṭṭabhāj*; and both the *Prāhāraka* and the *Astragrāha* are known as the wearers of wreaths (*mālādhara*) (as crowns)[1].

40-45. The *Chakravartin*, *Mahārāja* (i.e., *Adhirāja*), and *Narendra* (classes of kings), the wearers of crowns (*mauli*), should possess the throne together with the pinnacled crest (*nirvyūha*), the ornamental tree (*kalpa-vṛiksha*) and the ornamental arch (*toraṇa*); the *Pārshṇika*, *Paṭṭadhara*, and the third one, the *Paṭṭabhāj*, are said to possess all, namely, the throne, etc., except the ornamental tree (*kalpa-vṛiksha*); the king *Prāhāraka* is known to possess only the throne (i.e., without

[1] According to the detailed account of the crowns given later on (chapter XLIX) the *Chakravartin* or *Sārvabhauma* wear the *kirīṭa*, so also the *Adhirāja* or *Mahārāja*; the *Narendra* or *Mahendra* puts on a *karaṇḍa*; the *Pārshṇika* alone wears a *śirastraka*; all these kings may, however, put on a *mukuṭa* or *karaṇḍa*; the *Paṭṭadhara* wears the *patra-paṭṭa*; the *Maṇḍaleśa* puts on a *ratna-paṭṭa*; the *Paṭṭabhāj* wears a *pushpa-paṭṭa*; and both the *Prāhāraka* and the *Astragrāha* put on a *pushpa-mālya* (wreath, not a crown). For the characteristic features of these and other crowns see Chapter XLIX.

the other features); and the (petty) king *Astragrāha* should possess only a seat, (not a throne).[1]

46-47. All the kings beginning from the *Chakravartin* (and ending at the *Astragrāha*) without exception should specially possess the (royal insignia, namely), two chowries and the white umbrella, and many wreaths.

48. All the royal seats (i.e., thrones) are said to have six legs.

49. The *Chakravartin* in particular should put on nine (sets of) wreaths and be happy.

50-51. One chowry, without any umbrella, and (the throne) with four legs are generally suited to the kings (who are), superior in rank to the petty kings (that is), the kings of the intermediate and the higher ranks.

52. The kings other than the petty ones are said to be adorned with many wreaths.

53. They (the superior kings) should be like the crest-jewel (*niryūha*) amongst the good people in respect of conduct, and be ornamented with the garlands of pearls.

54-55. The intermediate and the higher (classes of) kings are known to possess (at least) two localities; and all other inferior kings possess only one locality.

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[1] According to the detailed account of the royal thrones given later on (Chapter XLV) the *Chakravartin* is supplied with the *prathama* (first class, including *maṅgala*, *vīra* and *vijaya*) throne; the *Adhirāja* or *Mahārāja* is given the *padma-bhadra* throne; the *Śrībhadra* throne is also suitable for the *Adhirāja* as well as for the *Narendra*; the *śrīviśāla* also for the *Narendra* as well as the *Pārshṇika*; the *śrībandha* also for the *Pārshṇika* as well as the *Paṭṭadhara*; the *śrīmukha* for the *Maṇḍaleśa*; the *bhadrāsana* for the *Paṭṭabhāj*; the *padma-bandha* for the *Prāhāraka*; and the *pāda-bandha* throne for the *Astragrāha* whose humble seat is not given the lion-legs owing to which the royal seats are called *siṁhā*-(lion) *sana* (seat).

For the architectural and other details of the thrones see Chapter XLV; for the similar details of the ornamental trees (*kalpa-vṛiksha*) see Chapter XLVIII; and for arches (*toraṇa*) see Chapter XLVI.

56. Those petty kings should serve those kings who are higher in rank.

57-59. The king called the *Chakravartin* exterminates the wicked; he is kind (to all), and governs the people always with sympathy and kindness; he takes (only) one-tenth (of the product of his subjects) as the royal revenue.

60-61. The *Mahārāja* (i.e., *Adhirāja*) takes one-sixth as the royal revenue; he finds out all wicked and good people, and protects their faith (*dharma*) in all directions (i. e., everywhere).

62-63. The king *Narendra* rules (over his kingdom) by taking as royal revenue one-fifth of the income of the rich, but gives away to the needy and the very poor.

64. The king called the *Pārshṇika* should take (as royal revenue) one-fourth (of the product).

65-66. The king *Paṭṭadhara* should take up to one-third (from the rich) as his share (of the royal revenue), and give lavishly to the learned and moderately to others.

67-68. The *Paṭṭabhāj* (class of kings) should take all (kinds of) the revenue from his kingdom, and be always respectful (in the gift of wealth) to the gods and the Brahmans.

69-71. The king *Prāhāraka* lives on the royal revenue taken from the country (i.e., his kingdom) (and) as laid down in the royal polity distinguishes right from the wrong; he should know the law (*dharma*) and acknowledge good services, but should be firm in words and deeds regarding (i.e., to retaliate) the contrary actions (i.e., harms done to him).

72-74. The *Astragrāha* (class of kings) also should take from his kingdom the just share of revenue; he should justly punish in proportion to the crime, but should not take revenge; he should always respect the gods, the Brahmans, and the ascetics.

75-76. In this way the petty kings should take the royal revenue from their own kingdoms and remain subordinate to the *Chakravartin* and the other kings.

77-78. On those moral and just lines mentioned above the (petty) kings should share (the product of) their kingdoms; thus all those non-Kshatriya kings are urged by the ancient learned authorities.

79-80. These characteristics of the kings are compiled on the authority of all the revealed *Vedas* (scripture), the *Pūraṇas* (traditions), and the *Śāstras* (customary law books).

81-82. One who studies these and understands the meaning is saluted at his lotus-like feet by all the wise men.

Thus in the *Mānasāra*, the science of architecture, the forty-second chapter, entitled:

The description of the royal orders and insignia.

CHAPTER XLIII

THE CARS AND CHARIOTS.

1-2. I shall (now) describe in order, according to rule, the characteristic features and measurement of (cars and) chariots fit for the ride of the gods, the Brahmans, and the kings.

3. The wheels, shapes, measurement, and ornaments, etc., of the chariots will be described.

5-8. The fifteen kinds of the transverse measurement (i.e., diameter) of a wheel should begin from three spans (i.e., one and a half cubits, or twenty-seven inches) and end at five cubits, the increment being by six *aṅgulas* (i.e., a quarter cubit); the same number of variety (i.e., fifteen kinds) as before may begin (again) from two spans (i.e., one cubit) and end at four cubits and a half, the increment being by half a span (i.e., a quarter cubit): these should be the diametrical measure of the wheels (in the cars) of the gods, the Brahmans, and the kings.

9-10. The fifteen kinds of thickness (of the rim of those wheels) should begin from two *aṅgulas* and end at seventeen *aṅgulas*, the increment being by one *aṅgula*.

11. The wheel should be made circular, and the spokes (*paṭṭa*) should be symmetrically attached to it.

12. The (whole) diametrical measure (of the wheel) being divided into three parts, the hub (*kukshi*) in the centre should be one part.

13–15. The fifteen kinds of the dimension (thickness) of the navel band (*veśana*) in the centre of the hub of the wheel should begin from three *aṅgulas* and end at seventeen *aṅgulas* (the increment being by one *aṅgula*); the hole (for the axle) should be always circular, and the hub also should be of circular shape.

16–17. The fifteen kinds of the projection (i.e., naval band) of the wheel beginning from three *aṅgulas* and ending at seventeen *aṅgulas*. the increment being as before (i.e., by one *aṅgula*), are thus stated.

18. The hub of the wheel should be adorned with all ornaments both inside and outside.

19–21. The length of the axle (*aksha*) together with the axle-hands (*śikhā*) should begin from three spans (i.e., one and a-half cubits) and end at five cubits, the increment being by six *aṅgulas* (i.e., a quarter cubit); exclusive (of the length of the axle) the length of the axle-hands (alone) should begin from one *aṅgula* and end at eleven *aṅgulas*.

22–23. The nine kinds of width of the axle (*aksha*) should begin from five *aṅgulas* and end at twenty-one *aṅgulas*, the increment being by two *aṅgulas*.

24–25. (The nine kinds), as before, of thickness (lit., height) of the axle should begin from seven *aṅgulas* and end at twenty-three *aṅgulas*, the increment being by two *aṅgulas*.

26. The axle-hand should be circular (in width), and its width and length should be made fittingly equal.

27 30. The *śāla* (sal), *jambuka* (rose apple tree), *sāra* (pithy trees) *sarala* (a kind of pine tree), *vakula* (Misusops Elengi), *arjuna*, *madhūka* (*Aśoka* tree), *tintriṇī* (tamarind tree), *barbura* (trees), *vyāghrī* (tiger tree), *kshīriṇī* (milk tree), *khādira* (Acacia catechu) *kṛikara*, *kṛitamāla* (Cassia fistula), and *śamī* (Mimosa suma) : with these timbers[1], the wheels, etc., should be made with due consideration to their strength.

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[1] Compare page 13, lines 9-10 ; page 14, lines 24, 29 ; page 15, lines 30, 31 ; page 19, lines 56-57 ; page 176, lines 348 359.

31. The length of the tooth (*danta*) should be four-fifths part of the width of the pike (*śalya*).

32-33. The straight length of the linch-pin (*kīla*) is said to be equal to one-and-a half times, or twice the width of the tooth.

34. A hole should be made in the extremity of the tooth, and the axle-bolt, or linch-pin (*kīla*) should be adjusted in it.

35. There should be a support (*ādhāra*) above the axle (*aksha*) ; its measurement is stated below.

36-37. The fifteen kinds of the breadth of the support (*bhāra*) should begin from half a cubit and end at five cubits, the increment being by six *aṅgulas* (i.e., a quarter cubit).

38-39. The nine kinds of length at the front and back are said to end at twice the breadth, the increment being by one-fourth of it.

40-42. Three, four, five, six, seven, eight, nine, or ten *aṅgulas* should be the width of the support (*bhāra*) by the shortest (or thinnest) part, but at the front, back and the spoke (*paṭṭikā*) part, it (the width) should be twice those (measures).

42-43. The same as the aforesaid width (i.e., three, four, five, six, seven, eight, nine, or ten *aṅgulas,* should be the breadth of the wood for the support (*ādhāra*) of all the chariots.

44. The height (thereof) should be increased by one-fifth of the breadth to twice.

45. To the upper part of the (main) support (*ādhāra*) of the chariot should be attached a supplementary support (*upādhāra*).

46-47. The length of the support (*bhāra*), being divided into four, five, six, or seven parts, should be decreased by one part (in the case of the supplementary support) ; and the last (i.e., seven parts) should be its length.

48-49. The height of the support of the chariot should be equal to the breadth or greater by one-fourth, one-half, or three-fourths, or twice the breadth.

50. The breadth of the wood (*dāru*) should be made equal to (? the height), and it should be adorned with all ornaments.

51. Underneath that (axle) should be made the ear (*karṇana*) one half of the height of the axle (*aksha*).

52. There should be holes on the support (*bhāra*) of the axle (*aksha*), at the end of the chariot.

53. The axle-bolt (*kīla*) should be adjusted in the holes; and spokes should be fittingly attached lengthwise.

54. Spokes (*paṭṭikā*) should also be fitted at the front and back of the supplementary support.

55-57. The pedestals (*upapīṭha*) above the forepart of the support (*ādhāra*) of the chariot should be equal to the height of the support or twice or thrice it; thus are stated to be made the pedestals adorned with all ornaments.

58. Above that (pedestal) should be a member looking like the entablature together with the crowning fillet (*uttara*), etc.

59-62. That (member) should be decorated with the images of the lion, the elephant, and the crocodile, with the paintings of leaves and all other things, with the dancing (*nāṭaka*) demons (*bhūta*), and the demi-gods (*yaksha*) on the four girths; (it should be) girdled with hooded serpents, and ornamented with arches (*toraṇa*) and small pillars (*pāda*), and also with the ear and the trunk of the elephant (*karikarṇa* and *nāsikā*).

63. All these should discreetly be made for beauty in all parts of the chariot except the bottom (or lower part).

64. The support of the chariot is described above; the measurement of the chariot (itself) is stated here (now).

65-67. The breadth should begin from three or four spans and end at five cubits, and five cubits and a-half, the increment being by six *aṅgulas* (i.e., a quarter cubit): these are stated to be the ten kinds of measures: (five) at the top and (five) at the bottom (lit., by the interior).

68-69. The eight kinds of the projection (*nirgama*) thereof should begin from one span and end at two and a quarter cubits, the increment being by six *aṅg ulas* (i.e., a quarter cubit).

70-71. The storey (*tala*) extending from bottom up to top, should be discreetly [made] one, two, three, four, five, six, seven, eight, or up to nine (in number).

72-73. The five kinds of height of the spire (*śikhā*) should begin from one span (i.e., half a cubit), and end at one cubit, the increment being by three *aṅgulas* (one-eighth cubit).

74-75. The (five kinds of) height of the spire over the second (storey) should begin from five *aṅgulas* and end at seventeen *aṅgulas*, the increment being by three *aṅgulas.*

76-77. The five kinds of height (of the spire) over the third storey should begin from one span and end at one-and-one-fourth cubits, the increment being by three *aṅgulas.*

78-79. The five kinds of height (of the spire) over the fourth storey should begin from one cubit and end at three spans, the increment being as before, (i.e., by three *aṅgulas*).

80-81. The five kinds of height (of the spire) over the fifth storey should begin from one cubit and three *aṅgulas*, and end at thirty-nine *aṅgulas*, (the increment being by three *aṅgulas*).

82-83. The five kinds of height (of the spire) over the sixth storey should begin from one and a quarter cubits, and end at one and three quarters cubits, (the increment being by three *aṅgulas*).

84-85. The five kinds of height (of the spire) over the seventh storey should begin from three spans less one-fourth (i.e., thirty-three *aṅgulas*) and end at three and three-fourths spans (i.e., forty-five *aṅgulas*), (the increment being by three *aṅgulas*).

86-87. The five kinds of height (of the spire) over the eighth storey is known to begin from three spans (i.e., thirty-six *aṅgulas*) and end at two cubits (i.e., forty-eight *aṅgulas*), the increment being by three *aṅgulas.*

88-89. (The five kinds of) height of the spire over the ninth storey should begin from three and one-fourth spans, and end at four and one-fourth spans, the increment being by three *aṅgulas* (i.e. one-fourth span).

90-91. (As an alternative), the height (of the spires) over the storeys from the first to the ninth should end at twenty-eight *aṅgulas*, consisting of one span (i.e., twelve *aṅgulas*) at the bottom (first storey), and the increment being by two *aṅgulas* (instead of three).

92-93. (As another alternative), the height (of the spires, over the nine storeys) from bottom to top should begin from one span (i.e., twelve *angulas*) and end at twenty *aṅgulas*, the increment being by one *aṅgula*

94-95. Each of those (nine) storeys should be greater in height than the one immediately above it by twenty-four or twenty-five *aṅgulas*.

96-97. A floor (*kuṭṭima*) should be constructed for each storey; its measurement should be included in the measurement of the base mentioned before.

98-99. The base may be furnished with a pedestal, or it may be alone (i.e., without the pedestal); (the measurement of) the base should be made excluding the measurement of the pedestal.

100. When the base is thus measured (i.e., excluding the pedestal) its cornice (*karṇa*, ear) should be made higher than usual.

101. The expert (architect) should make the images of all the gods in all the chariots.

102. All the chariots should be equi-angular; they may be (made) with or without porticos (*bhadra*).

103-104. The projection of the porticos should be made beginning from one span and ending at three spans, the increment being by three *aṅgulas* (i.e., a quarter span).

105-106. The (projection of the) support (i.e., the lower base) of the chariots should be one-third, three-fourths, three-fifths, or one-half of its breadth.

107. There should be four porticos (niches ?) on the four sides; or there may be three, two, or one lion-figure (on each side).

108. The wise (architect) may get made one portico inside the other as said before.

109. All the porticos may fittingly be furnished with vestibules (*nāsikā*, lit., nose).

110. The bud ornaments (*kuḍmala*) should be fitted at the side (*paksha*) of the face (like porticos).

111-115. The names of the chariots described above will be stated now : the *Nabhasvān-bhadraka, Prabhañjana-bhadrka, Nivāta-bhadraka, Pavana-bhadraka, Pṛishata-bhadraka, Indraka-bhadraka,* and *Anila-bhadraka ;* these are known to be the names of the chariots which are (always) made (equi)angular.

116. The *Nabhavsān-bhadra* should be furnished with square porticos, and the *Prabhañjana* with the hexagonal porticos.

117. The chariot called the *Nivāta* should have two-sided porticos, and the *Pavana* three-sided porticos.

118. The *Pṛishata* and the *Indraka* should be furnished with decagonal porticos.

119. The chariot called the *Anila* should be furnished with twelve-sided porticos.

120-122. According to some, the chariots may be made rectangular (*paṭṭāśra*) ; they may be circular, elliptical, square, rectangular, octagonal, hexagonal, or oval.

123-125. The square chariots are called *Nāgara,* the octagonal ones *Drāviḍa,* the circular ones *Vesara,* the hexagonal ones *Āndhra,* and the oval or of equal-sided ones are called *Kāliṅgaka*[1].

126. The wise (architect) should name the cars of the above mentioned shapes and measures after the gods (for whom they are made).

127. And all the porticos mentioned above should be employed in those various chariots.

128. (For the purpose of the porticos) the breadth of the chariot may be extended by the side of the (small) pillar, and the length (thereof) to twice (the breadth).

129-131. Of the aforesaid measures, the smaller varieties should be employed in the chariots of the gods the Brahmans, and the kings for fighting and mock-fighting, the intermediate varieties (of the chariots) for daily use (lit., festival), and the larger varieties (of the chariots) of the gods and kings for some special occasion (lit., great festival).

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[1] See the writer's *Dictionary* under Nāgara, pp. 299—316.

132-136. All the chariots suitable for fighting should be furnished with three wheels; all those meant for mock-fighting or ordinary ride (?flying)[1] should be furnished with four wheels; those meant for daily use (lit., ordinary festivals) should be furnished with five wheels; and all the chariots meant for special use (lit., great festivals) are known to possess six, seven, eight, nine, or ten wheels in order (of the size).

137-139. The chariots for fighting should have three platforms, (*vedi*), those for mock-fighting two platforms; and those for daily use (i.e., ordinary festivals) should be furnished with one, two, or three platforms (*vedi*); the chariots for special use (lit., great festivals) may possess three to nine platforms.

140-143. The chariots of the king *Sārvabhauma* (i.e., *Chakravartin*, of imperial status) should be furnished with one to nine platforms; one to seven platforms should be constructed in the chariots of the *Mahārāja* (class of kings); one to five platforms should be constructed in the chariots of the *Narendra* (class of kings); and one to four platforms should be constructed in the chariots of the kings called the *Pārshṇika*.

144. One to nine platforms should be constructed in the cars of Vishṇu and Tryambaka (Śiva).

145. One to seven platforms should be made in the cars of the heretics beginning from the Buddhists and ending at the Jains.

146-147. The number of platforms in the cars of other gods and goddesses should be four; but the best leading architect may make one to five platforms (for those cars).

148. The ornaments of the upper part of the cars (for the gods) will be described now.

149-150. One, two, or three storeys may be made in the divine cars; their measurement should be made according to one's discretion, and the rest should be as prescribed by the authoritative architectural works (*Āgama*, lit., scripture).

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[1] See note under the text.

151-154. The lower part of the cars should be decorated with the images of Brahmā (Gurupāda), Saroruha (Vishṇu), Śiva (Gur uvara) Shaṇmukha (Kārtikeya), (goddess) Sarasvatī, Gaṇapati, and the beloved (wife) of Śaṅkara (i.e., goddess Durgā), together with their various vehicles (*vāhana*), garments, and ornaments.

155-158. Now the (other) ornaments (i.e., decorations) of cars are described: (they consist of) peacocks' feathers, chawries, arches (*torana*), various bells, bright mirrors, fans, and the beautiful wreaths of the *ketaka* flowers.

159-160. From top to bottom the cars should be decorated with the (nude paintings of the) best of the heavenly women without any clothes on them, and representing on their limbs all their emotions.

161-162. (They should be painted to represent that they are) keeping very high tune of the *mardala* (a musical drum); at the top should be carved the Maruts (wind gods) as if moving slowly on the sky holding on by their hands.

163-164. The lute, the pipe (or reed), the *mṛidaṅga* (musical drum), together with the assemblies of many learned courtiers (*paṇḍita*), and so also should be carved the assemblies of the chiefs, kings, princes, ministers, priests, and the Brahmans.

165. The assemblies of teachers, masters of music, and artists should be party represented.

166.. The gods Vishṇu and Maheśvara (Śiva) surrounded by their devotees should be fittingly carved.

167-168. The door-keepers, Yakshas, Kinnaras, Nāga girls[1], Garuḍa (the king of birds) should be as well carved.

169-170. (The chariots) of the *Chakravartin* (class of universal monarchs) should be adorned (in addition) with the ornamental (*kalpa*) trees[2] and also with all kinds of platforms.

Thus in the *Mānasāra*, the science of architecture, the forty-third chapter, entitled:

The description of the cars and chariots.

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[1] Supposed to be the most beautiful among the better sex.

[2] For the details of the ornamental trees see chapter XLVIII.

CHAPTER XLIV

THE COUCHES BEDSTEADS AND SWINGS

1-2. The description of the couches suitable to be bedsteads of the gods, and the twice-born and the other castes will be stated now.

3-5. The breadth of children's couches (*bāla-paryaṅka*) should begin from eleven *aṅgulas* and end at twenty-five *aṅgulas*, the increment being by two *aṅgulas* : these are said to be the eight kinds (of breadth of the couches) for the children of all castes.

6. The length (thereof) should be equal to the breadth or greater by one-half or three-fourths, or twice the breadth.

7. The height of the window-like openings (between balusters)[1] on all sides should be one-half, or three-fourths of the breadth.

8. The height of the legs should be equal to that breadth or three-fourths of it.

9. The diameter (lit., width) of the legs should be three, four, or five *aṅgulas*.

10. It (the children's couch) should be furnished with four legs, and at the fore-part of a leg there should be a wheel.

11. The width of the wheel is said to be equal to the width of the leg.

[1] Compare line 24.

12. The depth (thereof) should be discreetly made one-half, one, or two *aṅgulas.*

13. There should be a recess (i.e., hole) at the fore-part of the leg, and (thereon) a horizontal device (lit., instrument) should be made (in order to adjust the frame).

14-15. The height (i.e., depth) of the frame (*paṭṭikā*) of the couch should be two or three *aṅgulas;* and its breadth should be twice that (depth); and its ends should be adjusted to the ear-like device at the fore-part of the legs.

16. In the middle (of the breadth) of the frames on all sides holes should be made (in order to overlay the board).

17-18. The cotton strip or the fibres of reed, palmyra, or hemp should be overlaid to fasten two boards (lit., frames) from end to end in a straight line.

19-20. Small circles (i.e., circular knots at the ends of the strip) should be made all over on the outer side of the frame; it (the circular knot) should be at the one or both (ends of the strip); the projection (of the strip beyond the knot) may be manifold.

21. It (the projection of the strip) should be made to match with (lit., similarly coloured as) the circular (knots) and the selected legs.

22-23. All round the upper part of the frames should be fittingly made the openings (between the balusters) resembling the shape of the cow's eye, or the elephant's eye, otherwise it should be invisible (i.e., there should be no opening between balusters), and it should be ornamented with leaves and flowers, etc.

24. The small balusters (above the frames) should be connected all over the small projections (of the strip).

25. There may be furnished many rows of balusters ornamented with their base.[1]

26. Thus should be (made) the couch for children, and it should be adorned with all ornaments.

[1] Compare lines 42—46.

27-28. The breadth of (the larger) bedsteads should begin from twenty-one *aṅgulas* and end at thirty-seven *aṅgulas*, the increment being by two *aṅgulas*.

29. They should be of the smallest, (the intermediate). and the largest types; and should be furnished with balusters (*aṅghrika*), and (window-like) openings (*antara*, lit., inter-space).

30. These (couches) are fit for men and especially for the gods.

31. The legs should end by the outside, and the breadth and length should be (as follows).

32-34. The length of the couches for the gods and the twice-born should be twice the breadth; or the breadth may be three parts and the length two parts more; (but) if it (i.e , the dimension) be greater or less than that it will be all defective.

35-37. The nine kinds (of breadth of the board) are said to be three, four, five, six, seven, eight, nine, ten, and eleven *angulas*: these breadths of the board (*paṭṭikā*) should comprise the smallest, (the intermediate), and the largest types.

38. The height (i.e., depth) of the surrounding boards (i.e., the frames) should be a half of its breadth.

39. All the couches are said to be quadrangular or rectangular (in shape).

40. The breadth (of all couches) should be verified by all the six formulas beginning with the *āya*.[1]

41. The circular cane pattern should be adorned on the outer side of the surrounding frames.

42. The (surrounding) frame should be raised in height by (erecting on them the balusters with) base and pedestal.

43-44. The *Śrī-bandha* (type of) base should be made for the couches of the gods, the Brahmans, and the kings; and the *Pāda-bandha* (type of) base is suited to the couches of all (other) castes.[2]

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[1] See pages 66-67, 285-286, etc., and the writer's *Dictionary*, pp. 600, 609—611.

[2] For the details of the various types of the base see chapter XIV, 131—149.

45-46. The *Prati-bhadra* (type of) pedestal is suited to the couches of the gods, the Brahmans, and the Kshatriyas (lit., kings); and the *Vedi-bhadra* pedestal is suitable for the couches of the Vaiśyas and of the Śūdras.[1]

47. The pedestal and the base should be covered over with the balusters (*nataka*)[2] etc.

48-49. They (the couches) for the gods should be given the divine form and those for the man should bear human look; all the shapes may, however, be suitable for the gods but the human couches should be as said above.

50. They should (all) be decorated with paintings and carvings of lotuses, leaves, etc., and be adorned with all ornaments.

51. They should be decorated with small platforms and bud (-like ornaments) made of ivory, or wood.

52. The three kinds of height of the legs should be six, nine, and twelve *aṅgulas*.[3]

53. The breadth (i.e., width) should be equal to the height or three-fourths, or a half of it.

54. If the width at the bottom be five parts it should be three parts at the top (of the legs).

55-58. The height should be divided into nine (equal) parts; (of these) the height of the base should be one part; the height of the lotus-pedestal (*padma*) should be two parts, and the height of the ear-like cornice (*karṇa*) one part; the pitcher (*kumbha*) should be made of one part, and the neck (*kandhara*) of two parts; the leaf-ornament

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[1] For the details of the various types of the pedestal see chapter XIII, pages 125-1 9.

[2] A moulding or ornament generally used together with petals (see the writer's *Dictionary*, page 316). But here it appears to have been used in the sense of balusters (*kalikāṅghrika*), compare chapter XVI, pages 53 55.

[3] Compare line 8 where the height of the smaller couches is given; for the larger type these heights appear to be too small.

(*patra*) above should be one part and a half, and the fillet (*vājana*) half a part.

59. Thus is described the *Kumbha-pāda* (pitcher-legged bedstead); it should have an elevated entrance.

60-61. The same with lion-shaped cornice and cyma-fillets all over is called the *Vajra-pāda* (club-legged) couch; it should be discreetly made beautiful.

62-63. The same otherwise decorated with cyma-fillets at the fore-parts of the middle and upper cornices is called the *Padma-pāda* (lotus-legged) couch; it is (also) adorned with all ornaments.

64. There should be four or six legs (in the couches) of the gods and the twice-born.

65. At the middle of the legs of the divine couches demons (*bhūta*) and lions may be carved optionally.

66. The couches of the kings should be furnished with lion-legs, and the legs in the couches of others should be made as before.

67. They should be adorned with all ornaments, and the rest should be made in accordance with one's discretion.

68. Iron nails should be driven into the holes in the legs (in order to strongly fit the frame).

69. At the top of that should be adjusted the board (*paṭṭikā*), and the fore-parts of the nails should be without knobs (*kabandhana*, lit., headless trunk).

70-71. For the bed of the gods, the Brahmans, the Kshatriyas and others, swings should be made with four chains by joining them with one another at the top.

72-74. *Vakula*, *aśvini-putra*, *drākshā* (grape), red sandal, *nimba*, *chandana* (sandal), *chāpa*, *śākha*, and *śami*: these should be the trees for the frame, etc., of the couches, as well as for their boards (lit., seats).

75-77. The *danta* (tooth), *kshīriṇī* (milk tree), *tinduka*, *virala*, and *śāka*: these trees are said to supply suitable timber for the legs of

all (couches); all other soft wood, if less expensive, may as well be used.

78–79. The length and breadth of the legs as well as the decorations should be discreetly made as recommended by the architect (?author himself)

80–81. It would cause the loss of son, life, and wealth if eye-like openings (on the side of balusters) be made over couches (i.e., swings) which are kept on (hanging).

82–85. If all the other features of the swings (*mañcha*), namely, its frames, boards, legs, etc., and also all other parts together with the lion legs, be made according to the rules of the science (of architecture), it would bring forth fortune, happiness, fruition, and pleasure (beatitude).

Thus in the *Mānasāra*, the science of architecture, the forty-fourth chapter, entitled:

The description of the couches, bedsteads, and swings.

CHAPTER XLV

THE THRONES

1 2. The measurement and the characteristic features of thrones suitable as the seat for the gods and the *Chakravartin* and other (classes of) kings will be stated now.

3. The throne called the *Prathama* (first) should be made for the first (stage of) coronation.

4. The *Maṅgala* throne is said to be used for the (second stage of) coronation called *Maṅgala* (auspicious).

5. The *Vīra* throne is said to be used for the (third stage of) coronation known as *Vīra* (hero).

6. The *Vijaya* throne is said to be used for the (concluding stage of) coronation called *Vijaya* (victory).

7. These are said to be the four kinds (of thrones) ; they should be used as the royal seats for the kings.

8-10. They (the thrones) are called the *Nityārchanāsana* (for daily worship) and the *Nityotsavāsana* (for daily festival) ; the throne for the special worship is called the *Viśeshāsana,* and for the great festival the *Mahotsavāsana* : these are said to be the four kinds of thrones fit for the gods.

11-16. Again the first throne is called *Padmāsana* (lotus seat), the second *Padma-keśara*, the third *Padma-bhadra*, the fourth *Śrībhadra*, the fifth *Śrīviśāla*, the sixth *Śrībandha*, the seventh *Śrīmukha*, the eighth *Bhadrāsana*, the ninth *Padma-bhadra*, and the tenth *Pāda-bandha*: these are said to be the names of the (other) thrones.

17. The measurement of all the above mentioned thrones will be described (now).

18-19. The nine kinds of breadth should begin from seven *aṅgulas* and end at twenty-seven *aṅgulas*, the increment being by two *aṅgulas*.

20. The length of the thrones for worship (i.e., gods) and for other purposes (i.e., for the kings and others) should be as before.[1]

21-23. The nine kinds consisting of (three in each of) the smallest and the other (i.e., the intermediate, and the largest) types should begin from fifteen *aṅgulas*, and end at thirty-one *aṅgulas*, the increment being by two *aṅgulas*: these are said to be the breadth of the thrones for daily worship (*nityotsava*).

24. The length (thereof) should be made as usual, and is said to be increased in order up to twice the breadth [2]

25-27. The breadth should begin from nineteen *aṅgulas* and end at thirty-five *aṅgulas*, the increment being by two *aṅgulas*: these nine kinds consisting of (three in each of) the smallest, and the other (i.e., intermediate, and the largest) sizes are stated to be given to the thrones for the special festival (*mahotsava*).

28-30. The length measured between the two legs should be twice the breadth, or twice less one-fourth, or one-and-a half times the breadth; it (the length) may, however, extend to the outside as well as the middle of the legs.

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[1] That is, according to the usual proportions, namely, equal to the breadth, or greater by one-fourth, one-half, three fourths, or twice the breadth.

[2] See note under line 20.

31. The length and breadth should thus be measured in all cases [1]

32. This is the measurement (of the thrones) for the gods; (the dimensions of) the thrones for the kings will be described (below).

33-35. Of the *Prathamāsana* they (the nine kinds of breadth) should begin from fifteen *aṅgulas* and end at thirty-one *aṅgulas*, the increment being by two *aṅgulas*: these are said to be the nine kinds of breadth (for the *Prathamāsana*) consisting of (three in each of) the smallest and the other sizes.

36-37. The length (thereof) should be greater than the breadth by one-half or three-fourths, or twice that: these are the three kinds of length.

38-40 The nine kinds of breadth as before should begin from seventeen *aṅgulas* and end at thirty-five *aṅgulas*, the increment being by two *aṅgulas*: these are said to be for the *Vīrāsana*; the length (thereof) should be made as before.

41-43. The breadth of the *Vijayāsana* should begin from twenty-one *aṅgulas* and end at thirty-seven *aṅgulas*, the increment being by two *aṅgulas*: these are said to be the nine kinds of breadth; the length (thereof) should be made as before.

44. The length and breadth are thus described[2]; their height is stated below.

45-47. The nine kinds of height consisting of (three in each of) the smallest, and the other sizes should begin from one *aṅgula*, and end at nine *aṅgulas*, the increment being by one *aṅgula*: these are the (nine kinds of) height (of the seats) for personal use[3]: they are made in proportion to the (respective) breadth.

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[1] The dimensions of the thrones designated above as the *Nityārchana* (line 8) and *Viśeshārchana* (line 9) are not specified

[2] It should be noted that the dimensions of the two other thrones, namely, the *Maṅgala* (line 4) and the *Vīra* (line 5) are not specified; compare the note under line 31.

[3] These are obviously meant to be the height of the (ten kinds) of seats mentioned in lines 11—15; the heights of the four divine and four royal thrones are separately specified in the following lines; compare lines 198-199.

48-50. The height of the *Nityārchana* throne (for daily worship) should begin from three *aṅgulas*, and end at nineteen *aṅgulas*, the increment being by two *aṅgulas*: these are said to be the nine kinds of height, and should be made in proportion to the breadth.

51-53. The height of the *Nityotsava* throne should begin from five *aṅgulas*, and end at twenty-one *aṅgulas*, the increment being by two *aṅgulas*: these are said to be the nine kinds consisting of (three in each) of the smallest, and other sizes as before.

54-56 The height of throne known as the *Viśeshārchanāsana* should begin from seven *aṅgulas* and end at twenty-three *aṅgulas*, the increment being by two *aṅgulas*: these are, as before, the nine kinds consisting of three in each of the smallest and the other sizes in order.

57-59. The nine kinds of height of the throne called the *Mahotsavāsana*, consisting of the smallest and other sizes should, exactly in the same manner as before, begin from nine *aṅgulas* and end at twenty-five *aṅgulas*, the increment being by two *aṅgulas*.

60-62. The nine kinds of height of the pinnacle (*śikhara*) (? of all the thrones) consisting of the smallest, the intermediate, and the largest sizes, are said to be three, four, five, six, seven, eight, nine, ten, and eleven *aṅgulas*.

63-64. The height of the *Pra hama* throne should begin from nine *aṅgulas* and end at seventeen *aṅgulas*, the increment being by one *aṅgula*.

65-66. The nine kinds of height of the *Maṅgala* throne are said to begin from eleven *aṅgulas* and end at nineteen *aṅgulas* (the increment being by one *aṅgula*).

67-68. The nine kinds of height of the *Vīra* throne are said to begin from thirteen *aṅgulas* and end at twenty-one *aṅgulas* (the increment being by one *aṅgula*).

69-70. The nine kinds of height of the *Vijaya* throne are said to begin from fifteen *aṅgulas* and end at twenty-three *aṅgulas* (the increment being by one *aṅgula*).

71. The six formulas beginning with the auspicious *āya* should be specially considered with regard to the breadth or (all) the four sides (lit., limbs) (of the thrones).[1]

72. The *Yonis* are determined by multiplying (the breadth, etc.), with three, four, five or six, and dividing the product by eight.

73-75. The wise (architect) should multiply (the breadth, etc.), with six, seven, eight, and divide the product by twelve, the remainder is said to be the *Āya*; when he multiplies the same by seven, eight, or nine, and divides the product by ten, the remainder is said to be the *Vyaya*.

76-78. When it (the length) is multiplied with eight, nine, or ten, and the product is divided by twenty-seven, the remainder is said to be the *Dina* (i.e., *Riksha*), and when it (height) is multiplied with eight, nine, or ten, and the product is divided by seven, the remainder is called the *Vāra*.

79. When it (the height) is multiplied with three, four, or five, and the product is divided by nine, the remainder is called the *Aṁśa*.

80. All the *Yonis* except the *gaja* (elephant) is auspicious for the thrones.

81-82. It is auspicious and conducive to all prosperity to make the *Āya* greater than the *Vyaya* (lit., to have greater *Āya* and less *Vyaya*); but it is ruinous to all prosperity to make the *Āya* less and the *Vyaya* greater.

83-84. The *dhūma*, *kāka* (crow), *gardabha* (donkey) and *śvāna* (dog): these *Yonis* should be avoided; all the other *Yonis* are auspicious; the auspicious *Yonis* should be used here (in measuring thrones).

85. The measurement of all (the thrones) are thus described; the relative measurement (i.e., the comparative measurement of different parts) is stated here.

86-87. The wise (architect) should make the (lion-legged) thrones with the base together with the pedestal, or only with the base, or with the pedestal alone.

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[1] For details see the writer's *Dictionary*, pages 600, 610 and compare chapter IX, 63-93; XXX, 168-194.

88-91. Of the twelve parts of the height, the base should be two parts, the small pillar (*pādaka*) one part and a half, the fillet-ear (*kampa-karṇa*) five parts, the small fillet (*kampaka*) half a part, the cyma (or lotus, *abja*) one part, the fillet (*vājana*) above one part, and the projection (*kshepaṇa*) half a part.

92-95. The *Vedi-bhadra* type of pedestal should be furnished with various pigeons (*kapota*); at the two upper parts the pigeons should be carved without their neck; they should be fitted at the bottom of the thrones fit for the gods and the kings.

96-97. The height of the pedestal should be one-fourth, one-half, or three-fourths of the height of a throne, or it may be (even) greater (if desired).

98. As an alternative the whole of the last portion may be given to the plinth which should be identical in height to the base.

99-108. Of the twelve parts of the height, one part should be the height of the base; above that the fillet (*kampa*) should be of half a part, and the pillar should be made of one part; the large cyma (*mahāpadma*) should be made of one-and-three-fourths parts; above that the round ear (*karṇa-vṛitta*) and the small cyma (*padmika*) should be (jointly) one part and a half; the neck (*kandhara*) should be made of half a part; equal to that (i.e., half a part) should be made the petal of the round (circular) fillet (*kampa-vṛitta*) above, and the cyma above that should be half a part; the round pitcher (*kumbha-vṛitta*) should be one part, and the small cyma (*padmika*) above that half a part; equal to that should be made the round drip (*nimna-vṛitta*) and the fillet above that; the small neck (*galaka*) above should be of two parts, a the round fillet (*kampa-vṛitta*) one part; the drip (*nimna*) and the fillet (*kampa*) should be half a part each, and the small corona (*kapotaka*) should be made of one part.

109-111. The one part above that being divided into four parts, should be discreetly distributed among the (flat) fillet (*āliṅga*), the interval (*antarita*), the crescent fillet (*prati-vājana*), and the round fillet (*vṛitta-kampa*); and the whole should be adorned with all ornaments.

112. It should be decorated with leographs, etc., with leaves and flowers; and there should be carved two crocodiles at the two wings.

113. The two pigeon-like mouldings (*kapota*) should be furnished with nose-like ornaments (*nāsikā*), and it should be decorated with the carving of female crocodile face.

114-115. Sprouts and leaves should be gracefully carved at the four corners (*karṇa*); the middle part should be ornamented with those leaves, and it should be adorned with all (other) ornaments.

116 The neck (*gala*) should be furnished with calyx ornaments (*nāṭaka*), and the carvings of the (demi-gods) *Yakshas* and *Vidyādharas*, etc.

117. The round pitcher (*vṛitta-kumbha*) should also be ornamented with calyx ornaments and bands (*paṭṭa*), etc.

118. All those mouldings resembling the lotus should be furnished with filaments and petals, etc.

119. The height of the neck (*gala*) ornamented with various bands (*paṭṭa*) may be of any (other) desirable measure.

120. Thus is described the *Padmāsana* (the lotus seat); this should be the throne for Siva and Vishṇu.

121. The same with a pedestal (*upapīṭha*) is called the *Padma-kesara.*

122. The pedestals should be furnished with small, round, and angular (i.e., crescent) fillets (*kampa*).

123. The drips (*nimna*) should be adorned with pearls, and the gems should be inserted all over.

124. The neck portions of all the pedestals should be ornamented with calyx (*nāṭaka*).

125-126. They should be furnished with small cuckoo cots, nests, arches, vestibules (*nāsikā*), jug-pillars (*kumbha-pāda*), and vestibule-nests (*nāsikā-pañjara*).

127. They should be furnished with all ornaments and adorned with paintings of the lotus, etc.

128. Thus should be decorated the thrones of gods and all the kings known as the *Chakravartin* and others.

129. Of the twenty-one parts of the height, the base should be one part.

130. The pillar (*pāda*) and the projection (*kshepaṇa*) should be one part each, and the cyma (*ambuja*, lit., lotus) one-and-three-fourths parts.

131–132. The one part above that being divided into three parts, the drip (*nimnaka*) is said to be of one part, and the round fillet (*vṛitta-kampaka*) two parts.

133. Above that the fillet (*kampa*) should be one part, and the height of the cavetto (*vapra*) five parts.

134. The one part above that being divided into three parts should be (equally) given to the circular moulding (*vṛitta*), the cyma (*padma*), and the small circle (*vṛittaka*).

135. Above that, the cyma (*padma*) should be equal to the circular moulding (i.e., one-third part) and the smaller circle equal to the cyma.

136. The remaining two parts should be given to the torus (*kumuda*) which should be made round.

137. The one part above that being divided into three parts should be (equally) given to the circle (*vṛitta*), the cyma (*padma*), and the fillet (*kampa*).

138–139. The cornice (*karṇa*) above should be of three parts, and the one part above that being divided into three parts should be (equally) given to the fillet (*kampa*), the cyma (*padma*), the circle (*vṛitta*); and the small corona (*kapotaka*) should be of two parts.

140. Above that the joining fillet (*āliṅga*) and the interval (*antarita*) should be made of one part each.

141. Above the crescent moulding (*prati*) should be the fillet (*vājana*), on which again should be a fillet (*kampa*), and the whole should be adorned with all ornaments.

142. Thus should be made the (throne called) *Padmabhadra*; this is fit for the *Adhirāja* (class of kings).

143. There should be sixteen (equal) parts in the height, and the base should be made of one part.

144. The fillet (*vājana*) should be half a part, and the small band (*vetraka*) one-fourth of a part.

145. The large cyma (*mahāmbuja*) above that should be three-and-one-fourth parts.

146. Above that the drip (*nimna*) should be half a part, and the cyma (*padma*) equal to the latter (i.e., half a part).

147. The height of the torus (*kumuda*) should be two parts, and the cyma (*ambuja*) above that half a part.

148. Equal to that (i.e., half a part) should be the fillet (*kampa*) above, and the height of the neck (*gala*) three parts.

149. The fillet-cyma (*kampa-padma*) should be one part, and the small corona (*kapotaka*) two parts.

150. The connecting fillet (*āliṅga*), the interval (*antarita*), and the crescent fillet (*prativājana*) are said to be one part each.

151–152. Thus is described the (throne called) *Śrībhadra*; this should be adorned with all ornaments. this is suitable for all purposes (lit., seats, *sarvāsana*) of the *Adhirāja* and the *Narenda* (classes of kings).

153. Of the twenty-two parts of the height, the base should be made of two parts.

154. Of the same measure (i.e., two parts each) should be made for the sake of beauty three circular ornaments in order like the steps of staircases.

155. Above that the cyma (*padma*) should be one part, and the surrounding cane-like band (*vetraka*) half a part.

156. The upper fillet (*kampa*) should be half a part, and above that the small circle (*vṛittaka*) half a part.

157. The three parts of the cavetto (*vapra*) should be adorned with various flowers.

158. Above that the circle (*vṛitta*) should be half a part, and the cyma (*paṅkaja*) above equal to that (i.e., half a part).

159. The small circle (*vṛittaka*) above should be half a part, and the small cyma (*padmaka*) above the latter equal to that.

160. Above that the circle (*vṛitta*) should be half a part, and its petal (*dala*) should be equal to that.

161. The middle circle should be made of one part, and its projection (*nirgama*) should be shaped like the torus (*kumuda*).

162. Above that the cyma (*padma*) should be half a part, and the surrounding cane-like band (*vetra*) also half a part.

163. Above that the flat fillet (*paṭṭa*) should be half a part, and the height of the neck (*gala*) three parts.

164. It should be adorned with various pillars, lions, leaves, and creepers, etc.

165. Above that should be the upper fillet (*agra-paṭṭa*), and above the latter the circular band (*vetraka*)

166. Equal to that should be the cyma (*padma*) above, and the fillet (*vājana*) one part.

167. The corona (*kapota*) should be of two parts, and above that the fillet (*vājana*) one part.

168. Above that the circle (*vṛitta*) should be of one part, within which should be ornamented the leographs, etc.

169. This should be adorned with all ornaments, and the rest should be discreetly made.

170-171. Thus is described the (throne called) *Śrīviśāla* (this is) fit for the *Pārshṇika* and the *Narendra* (classes of kings) to be used as the four thrones, namely, the *Prathama* ending at the *Vijaya*

(including *Mangala* and *Vīra*, which are required for the four stages of coronation)[1]

172-174. The same (throne) with this difference that the projection of the circle within the cavetto (*vapra*) should be two parts, and the rest of the paintings should be (painted) as before, is known as the *Srībandha* (throne): this is fit for the kings, the *Pārshṇika* and the *Paṭṭadhara*, for the purposes (i.e., four stages of coronation) mentioned before[2].

175-176. The same (throne) with this difference that the upper fillet above the middle pitcher should be one part; this is called the *Śrīmukha*: this is fit for the *Maṇḍaleśa* (class of kings, for all the four stages of coronation).

177-178. The same with a surrounding circle (*vṛitta*) made at the forepart of the bottom without any cyma (*ambuja*) is said to be the *Bhadrāsana*: this is fit for the throne of the *Paṭṭabhāj* (class of kings).

179-181. The same with a cyma (*ambuja*) of two parts above the base, and the rest being made as before, is known as the *Padmabandha* throne: this is fit for the *Prāhāraka* (class of kings) for the purposes of all the thrones (required for the four coronations)[3].

182. Of the thirty parts of the height, the base should be made of two parts.

183. The height of the cyma (*padma*) should be three parts, and the fillet (*kampa*) should be made of one part.

184. The height of the cavetto (*vapra*) should be six parts, and the pitcher (*ghaṭa*) above that seven parts.

185. The cyma (*padma*) should be one part, the cornice (*karṇa*) four parts, and the fillet (*kampa*) one part.

186. The height of the corona (*kapota*) should be three parts, and the connecting fillet (*āliṅga*), etc., two parts.

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[1] See lies 3-7.

[2] Compare lines 170-171.

[3] See lines 3-7, 170-171.

187. This should be decorated with lographs, lions, flowers, and crocodiles, etc., at the cornice (*karṇa*).

188. There should be circular cane like bands all over, and it should be decorated with the nine gems.

189. Thus should be made the (throne called) *Pādabandha*: this is fit for the *Astragrāha* (class of kings).

190. The lion legs should not be made for the (thrones of the) *Astragrāha* (class of kings).

191. The pedestal, etc., should be made for (the thrones of) the petty kings of the Vaiśya and the Śūdra castes.

192-193. The thrones furnished with four pinnacles would be suitable for all the thrones for all; they are said to be fit for all the gods and the crowned kings.

194-195. The *Prathama* and the other thrones of all classes of kings are further described (here); they should be furnished with six legs shaped like the lion.

196. All those (four thrones) should be made facing the east, (because) if the reverse be made it will destroy all things.

197. The eyes (*nirīkshaṇa*) should be opened at the four sides of the thrones for the gods.

198-199. The height of the legs of all (thrones) should begin from three *aṅgulas*, and end at nineteen *aṅgulas*, the increment being by two *aṅgulas* [1].

200. Thus are described the various kinds of thrones; but those which appear beautiful should be used.

201-202. The height of the leg should be nine parts and the height of the lion four parts; the rest should be made as before, and be symmetrically constructed in their proper places.

203-206 The beautiful thrones marked with lions should be made for the *Chakravartin*, the king mentioned first; for all the

[1] Compare lines 45-47, and the note thereunder.

(remaining) eight classes of kings also the thrones may be marked with lions and made (equally) beautiful.

207-210. The thrones called the *Prathama*, the *Maṅgala*, the *Vīra*, and the *Vijaya* together with their individual peculiarities in accordance with the nine classes of kings, as well as their common characteristics have been (thus) stated by the wise (architects).

211-212. The thrones of all the chief gods beginning with Vishṇu and Rudra, of Jina and Buddha, as well as the occasion (lit., festival) of their use have been (also) stated by the learned (architects).

Thus in the *Mānasāra*, the science of architecture, the forty-fifth chapter, entitled:

The description of the thrones.

CHAPTER XLVI

THE ARCHES

1-3. Arches are made for (the decoration of) the (temples of) gods, and the (palaces of) kings, for (ordinary residential buildings, as well as for) the upper portions of all kinds of thrones[1]; their features and the rules for their construction will be described as fully as possible.

4-5. Arches should be extended from the middle line across the breadth and length between the centre of the pillars erected from a half portion of the pedestals (i.e., the pavement or floor).

6-7. As an alternative, the pillars of the arch may be erected from the centre or out of (i.e., covering) the whole (of the pedestal) placed in the middle of the third or second part on the right or left (of the floor).

8-9. As another alternative, the pillars (of the arch) may be erected from the floor at a distance of the third, the second, or the fourth part of the length.

10-11. As another alternative, the aforesaid distance between the pillars (of the arch) taken from the centre or outer side (thereof)

[1] The first line is badly preserved: the reading of the *codex archetypus* does not give a connected sense. Compare line 30 and see the writer's *Dictionary*, pages 246—254, where numerous references to 'arch' have been gathered together from other chapters of this text and from various literature and inscriptions.

may be one part less out of the five, six, seven, or eight parts (of the floor).

12-15. The height (of the arch) should be equal to the width of the floor, or greater by one-fourth, (one-half), three-fourths, or twice (that distance); or the height of the arch may be equal to the whole length, or greater by one-fourth, one-half, or three-fourths, or twice.

16. This should be the measure of the height of all the arches proper.

17-18. Three, four, five, six, seven, eight, nine, ten, or eleven parts (*aṅgula*): these are the nine kinds of height of the arch.[1]

19-20. The width of the pillar (of the arch) should be three, four, five, or six parts (*mātra*); equal to that (width), or three-fourths, or one-half should be the projection thereof.

21. The pillar should be connected by (lit., furnished with) arches; and small pillars should be erected along the arches.

22. There should be a beam (*paṭṭikā*) over the top of pillars (of the arch): its measurement will be stated now.

23-24. The height of the fillet (*vājana*) should be equal to, or twice the width of, the pillar (of the arch); the length thereof should extend to the abacus (*phalakā*), or be four or five parts (lit., *aṅgula*).

25. Thus should be an arch extending to the fillet; but the arch may be without any such fillet.

26-29. The height of the arch mentioned above should be divided into eight parts, of which the height of the pillar should be five parts, and the arch (proper) three parts; or of the nine parts of the height, the pillar should be six parts in height, or of the ten parts, the pillar should be seven parts and the remainders the arch (proper).

[1] Compare lines 19-20 where the term *mātra* (part) is used as a unit of measure; herein (lines 17-18) if *aṅgula* be taken in the sense of ¾ inch, the height of the arch would be too small except for those arches which are employed in the royal and divine thrones.

30. The arches should be constructed for the houses (*sthānaka*)[1] as well as for the thrones of the gods and the kings.

31-32. The arches may be circular, hexagonal, like the half moon (crescent), triangular, bow-shaped, or of any other desirab'e form.

33. The architiet should make the circular arch by drawing a circle from the centre.

34. The crescent-shaped arch should be made by drawing a half circle up to the nose (*nāsikā*, i.e., from one end to the other of the diameter).

35. The bow-shaped arch should be made by drawing up to the half of the previous (semi-circular) one on the two sides.

36. The triangular (lit., of three sides) arch should be made by making the three sides equal: (all) the arches should be discreetly made.

37-39. The *Patra* (leaf), *Pushpa* (flower), *Ratna* (jewel), and *Chitra* (variegated): these are said to be the four kinds of arches, for (the thrones of) the gods, and the three-crowned monarchs (i.e., the *Chakravartin* class of kings); the *Pushpa* and the *Ratna* arches (only) should be (employed in the thrones) for the other kings.

40. The arch adorned with leaves and creepers is called the *Patra-toraṇa*.

41. The arch adorned with various flowers is (known as) the *Pushpa-toraṇa*.

42. The *Ratna-toraṇa* (jewel arch) should be made by ornamenting it with all jewels.

43-44. The arches adorned with various ornaments and the carvings of the demi-gods, *Yakshas*, *Vidyādharas* and others, are stated to be the *Chitra-toraṇa*, and have been recommended by the ancient authorities.

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[1] The term has been used in other places both in the sense of a class of buildings and temples with idols in erect posture. (See the writer's *Dictionary*, page 730.)

45. Over the middle and upper part of all arches should be carved the image of Nārada together with his small drum (*tumbu-u*).

46. The two sides of those parts should be decorated with the carvings of crocodile, etc.

47. The crocodile and leaves should be ornamentally carved at the bottom and top of the arches.

48. The fore-part of an arch should be furnished with ornamental leaves, demons, creepers, and seats, etc.

49. On the two sides of the pillar should be carved leographs upholding the arch.

50. The rest should be tastefully decorated : this is said to be the *Patra-toraṇa* (leaf-arch).

51-52. The same decorated with various ornaments, jewels, flowers, and with the demi-gods, the *Yakshas, Vidyādharas*, and others, is called the *Chitra-toraṇa* (variegated arch).

53-55. It should be furnished with the carvings of crocodiles, and female *Kinnaras* but should be without any (other) carvings (and) lotuses, although all over decorated with flowers and various ornaments, the flowers here referring to the *makaranda* (a kind of jasmine) alone : such an arch is called the *Pushpa-toraṇa*.

56-61. It should be decorated all over with the nine gems[1], with crocodiles and the *Kinnaras*[2]; all the gems should be engraved on the tail and all other limbs of the crocodiles; the gems should be suspended like clusters of stars over the belly (of the crocodiles); two serpent-shaped pillars should be erected over the upper part of the arch; the extreme parts (i.e., links) of the crocodile should be covered with all the gems (placed) in rows; and it should be adorned with all (other) ornaments : this is called the *Ratna-toraṇa*.

62. The ornaments of the crowning fillet (*vājana*) and the pillars (of the arches) should be made as said before.

[1] See page 220, lines 390-394, etc.

[2] A mythical being with the body of a man and the head of a horse.

63-64. The lotus and (i.e., on the trunk of) the elephant should be made over the middle of the arch, and over the centre thereof should be made the image of Lakshmī (goddess of wealth) adorned with various ornaments.

65-67. The tenia (*tāṭikā*), abacus (*phalakā*), fist-band (*mushṭi-bandhana*), leaves, creepers, crocodiles, faces of female *Kinnaras*, snake-like figures at the upper portion of theatre-like moulding (*nāṭaka*), and the lions should be ornamentally made on the same parts (*nāṭaka*) of the *Chitra-toraṇa*.

68-71. With regard to the decoration of the jewel arches (over the thrones, etc.), the leaf and the flower ornaments (only) should be used; thus the jewel arches should be without any figure paintings for the upper ornaments: thus is stated to be the jewel arches without paintings for upper ormamants.

72-75. The arches may be also constructed without any flowers or leaves; or the *Patra-toraṇa* (leaf arch) may be made without any gems; and the *Pushpa-toraṇa* (flower arch) may be furnished with the carved lotuses.

76-77. The leading architects prefer to make plain arches without jewels, leaves, or any other decoration.

Thus in the *Mānasāra*, the science of architecture, the forty-sixth chapter, entitled:

The description of the arches.

CHAPTER XLVII

THE CENTRAL THEATRE

1-2. The measurement and the characteristic features of the open shed (court) yard (*mukta-prapāṅga*) fit for the residence and seats[1] of the gods and the kings will be described now.

3-4. That (courtyard) should be made within the central theatre, the breadth whereof should be divided into thirty-four parts; and the breadth of the shed (*prapā*) proper is desired to be one part less on each side.

5-6. Of the four parts of the height of that (shed proper) the height of the plinth (or platform, *masūraka*) should be one part; twice that (i.e., two parts) should be the height of the pillar (*pāda*), and one-half of that (i.e., one part) the height of the entablature.

7-11. As an alternative the (whole) height should be divided into eight parts in particular; of these the (height of the) platform (*vedi*) should be one part and a half, the height of the pillar five parts, and the height of the entablature one part and a half; or the height being divided into six parts, the height of the platform (*vedi*) should be one part, and the height of the pillar four parts, and the height of

[1] Compare chapter XLVI, 30.

the entablature (*mañcha*) one part: it should be adorned with all ornaments.

12. Four half-pillars (*ardhāṅghri*) may be, otherwise, erected with one-third (of the total height as their length).

13-15. The width of all pillars should be three, four, or five *aṅgulas*: thus is stated to be the (diameter of the) wooden pillars; (but) the stone pillars are specially recommended, of which the width should be six, seven, or eight *aṅgulas*.

16. They (the pillars) should be circular, square, octagonal, or sixteen-sided.

17-19. Of the eight parts of the height of the pillar the upper three parts should be ornamented with the capital (*bodhikā*), fist-band (*mushṭi-bandha*), abacus (*phalakā*), tenia (*tāṭikā*), and pitcher (*ghaṭa*); it should be adorned with all ornaments; and the lotus-pedestal (*padmāsana*) should be attached at the bottom.

20. There should be made four porticos (*bhadra*) on the four sides, but according to some (authority) there may be only one portico.

21-22. There may be (at the bottom of the pillar) a base, or a pedestal, or the plinth (*masūraka*) together with a pedestal; or there should be only a signified platform (*chihna-vedi*).

22-23. The ornaments of the shed (*prapā*) are described (below): it should be ornamented with crowning fillets (*uttara*), lower fillets (*vājana*), fist-bands (*mushṭi-bhandha*), and pentroofs (*lupā*), etc.

24. There should be eight or sixteen small vestibules (*kshudra-nāsi*)[1] on all sides.

25. Its (shed's) top portion should be decorated with the images of leographs (*vyāla*) and crocodiles (*makara*), etc.

26-29. Therewithin (i.e., inside the theatre) the thrones, etc., should be arranged (in tiers) in the middle of the yard (lit., hall, *sabhā*, for *prapā*), that is, comprising all kinds of seats assigned for ordinary special, and occasional uses to the *Chakravartin* and the other

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[1] See chapter XLII, 2-5.

classes of kings, as well as to the gods to be seated together with their consorts, as also for the accommodation of ordinary people (*jana*).

30-33. The thrones, the crocodile arches, the ornamental trees (*kalpa-vṛiksha*) and the open shed (*mukta-prapāṅga*) should be constructed of wood, stone, and brick, and other materials; it should be made (strong and) all the more beautiful with gems, with some special kind of metal (iron) profusely employed on many parts, and also by partitioning the walls (*sāla*).

34-37. If the measurement of the pillar, the base, and the upper mouldings (*uttara*) prescribed for the open shed (*mukta-prapāṅga*) be less or greater, the king and the kingdom will be ruined.

Thus in the *Mānasāra*, the science of architecture, the forty-seventh chapter, entitled:

The description of the central theatre.

CHAPTER XLVIII

THE ORNAMENTAL TREE

1-2. The features and measurement of the length, etc., of the ornamental (*kalpa*, lit., all productive) trees[1] fit (for the thrones, etc.) of the gods and the *Chakravartin* and other kings will be described now[2].

3-4. The height of such a tree constructed in the upper part of a throne should be equal to, or greater than the height of the pillar of the arch by one-fourth or one-half.

5. It should be constructed over the arch erected from the middle of the length of a throne.

6-8. The width at the bottom of the ornamental (*kalpa*) tree is said to be six, seven, or eight *aṅgulas*, the measurement being taken in the finger of the deity or the king (for whose throne it is made); (than at the bottom) the width at the top of the tree should one or a half an *aṅgula* less.

9. Thus is described the trunk (*pāda*, foot) of the tree, which should be adorned with leaves and creepers, etc.

10. In other words, that (the tree) should be carved in a straight posture with its width decreasing from the bottom towards the top.

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[1] A mythical tree supposed to yield whatever is wanted of it.

[2] See lines 68—70 where the places of the employment of the ornamental trees are mentioned.

11-12. The foot (trunk) of the tree should be coiled with serpents with five hoods spreading at the top: they (the serpents) should be made with all their hoods quite expanded and the tongues trembling and the eyes glittering.

13-17. The nine kinds of (measure for the) hoods should be six, seven, eight, nine, ten, eleven, twelve, thirteen, and fourteen *aṅgulas* (in breadth): the width at the middle should be equal to that, the width at the top a little less, and at the bottom one-half of that; and the tip of the tail should be one *aṅgula*.

18. It should be made tapering from bottom to top, but it may be discreetly made of all other shapes.

19. Its face in look (lit., emotion) may be optionally like that of the leograph, and the rest should be made at one's discretion.

20-22. The branches of the tree above that (the trunk) should be carved in nine rows; the nine varieties should consist of eleven to twenty-three branches (the increment being by two and) consisting of three kinds in the smallest, and the other (i.e., the intermediate and thelargest) types.

23. These should be constructed for the *Narendra*, the *Adhirāja*, and the *Sārvabhauma* (classes of kings).

24-25. The nine varieties in case of the gods should begin from nine branches and end at twenty-five branches, the increment being by two.

26-28. In case of the kings, the nine kinds of length of the branches, consisting of three in each of the smallest and the other types, are said to begin from eleven *aṅgulas* and end at twenty-nine *aṅgulas*, the increment being by two *aṅgulas*.

29-31. In case of the gods, the nine kinds of length of the branches, consisting of the smallest (and the intermediate) upto the largest types, should begin from thirteen *aṅgulas*, and end at thirty-one *aṅgulas*, the increment being by two *aṅgulas*.

32-34. In case of the kings, the (corresponding) width of the branches, consisting as before of the smallest and the other types, should

be three, four, five, six, seven, eight, nine, ten, and eleven *aṅgulas* in order.

35-37. In case of the gods, the nine kinds of the width of the branches are said to begin from five *aṅgulas* and end at thirteen *aṅgulas*, the increment being by one *aṅgula*.

38. The projection (*bahala*) of those branches should be equal to or a half (of their width).

39. The root of all branches should be attached to the top of the trunk.

40-42. The width at the bottom of the tree should be equal to, or greater by two *aṅgulas* and a half, one-and-three-fourths, or twice the width at the bottom of the branches which should be symmetrically attached to those parts (i.e., at the top of the trunk).

43. The branches should be furnished at their root with creepers and leaves growing from the bottom (of the tree).

44. The great creepers (*mahāvallī*) should be at the top (*chūlana*) and the broken creepers, etc., on the two sides.

45. The surrounding branches spreading from the top should form a disc (i.e., look like the disc).

46. The front creeper should be adorned all over up to the foremost crest (end) with leaves and flowers.

47. The interspaces of one or many branches should be furnished with flowers.

48-50. The branches should be furnished with leaves, creepers growing from the root, the root of the creepers, the two creepers, and many creepers, leaves, flowers, and fruits; they may also be without fruits.

51. They should be also furnished with new creepers and leaves, etc., and with the buds of the divine flowers.

52-53. All the creepers should be made greenish in colour; but the forepart of all (the creepers) should be adorned with red colour.

54. The characteristic mark of all the leaves is that they should be adorned with gold colour.

55. The tip of the leaves and all the small (new) creepers should be greenish in colour.

56. All the recesses (*niretana*, for *niketana*, a house) of the branch should be inhabited by bees.

57. It (the *kalpa* tree) should be furnished with various leaves, flowers, and creepers.

58. Like garlands of jewels various birds should be carved playing thereon.

59. There should be carved various monkeys and many goddesses in a playing mood.

60. There should also be carved the *Siddhas*, *Vidyādharas*, and other demi-gods on all the branches and at their interspaces.

61. All these may be carved in the interior and exterior, and all over the all (trees).

62. Leaves, etc., should be gracefully carved all over the trees from the bottom to the top.

63. The small joints (*parvan*) should be all over it (the tree), and the offshoots (*nirgama*) of leaves and creepers should grow therefrom.

64. The boss (*mauli-muṇḍa*) should be attached to the joint at the root of a branch.

65. It (the tree) should be furnished with leaves, flowers, and shoots with drooping heads, etc.

66. The bee-like figures should be represented all over the leaves and creepers.

67. The rest should be discreetly made: such should be the ornamental (*kalpa*) tree.

68-70. The ornamental (*kalpa*) trees should be carved in front of and beyond the courtyards, the open sheds, in the middle of the pavilions, and for the thrones marked with the crocodile-shaped arches.

71. The Lord of the disc (i.e., the god Vishṇu) moves about and resides thereon (on the trees) with pleasure.

72-75. His (Vishnu's) lotus-like feet are worshipped by the great kings, their sons of full moon-like face, the royal court ladies (queens), the beautiful courtesans of the capital city, the learned men, as well as the chief of the sons of the bards (*vandin*)[1].

Thus in the *Mānasāra*, the science of architecture, the forty-eighth chapter, entitled :

The description of the ornamental tree.

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[1] A class of people who compose verses, etc., in praise of a great man

CHAPTER XLIX

THE CROWNS

1–4. Young girls and other maids together with an assemblage of wealth and jewels, *śali* corn, land, houses, servants, conveyances (vehicles and horses) should always be offered to the chief of the architects[1] by the good master with his hands much in the posture of receiving boons.

5–8. If the master do not do the proper respect (to the artists) out of one reason or another (lit., combination of reasons, *yoga,* also fraud) he will fall down as long as the earth and the moon exist; but if he does the aforesaid respect he becomes like a king and attains all prosperity, desirable things, and success.

9–11. If the hearts of the artists be gratified the worshipper (i.e., the master) will attain his desirable fruits; but if the architects become dissatisfied (at the gifts) all prosperity will be ruined; the master should, therefore, try always to please the chief of the architects (in particular).

[1] Compare line 11 where the recipient of the gifts is stated to be the chief (lit., preceptor, *āchārya*) of the architects.

12. The characteristic features of the crowns of the gods and the kings will be described now.

13-16. In respect of form (lit., shape) and measure they (the crowns) are classified into the *Jaṭā*, *Mauli*, *Kirīṭa*, *Karaṇḍa*, *Sirastraka*, *Kuntala*, *Keśabandha*, *Dhammilla*, *Alaka*, *Chūḍaka*, and *Makuṭa*[1]; and the three kinds of (plainer) diadems are known to be the *Patra paṭṭa*, the *Ratna-paṭṭa*, and the *Pushpa-paṭṭa*.

17. The *Jaṭā* (matted hair), and the *Makuṭa* (diadem) are fit for Brahmā (the grandfather) and Rudra (Śiva).

18. The *Kirīṭa*, and the *Makuṭa* are suited to Nārāyaṇa (Vishṇu).

19. The *Karaṇḍa*, and the *Makuṭa* are fit for the inferior gods.

20. The *Jaṭā*, the *Mauli*, the *Makuṭa*, and the *Kuntala* are suitable for Manonmanyā (Rati, the goddess of love).

21. The *Keśabandha* and the *Kuntala* are fit for Sarasvatī and Sāvitrī.

22. As an alternative (i.e., general rule) the *Karaṇḍa* and the *Makuṭa* may be fit for all the female deities (Śakti).

23. The *Kirīṭa* is suitable for the kings *Sārvabhauma* (i.e., *Chakravartin*) and *Adhirāja*.

24. The *Karaṇḍa* is (fit) for the king *Narendra*, and *Sirastraka* for the *Pārshṇika*.

25. As an alternative (i.e., general rule) the *Karaṇḍa* and the *Makuṭa* may be fit for the *Chakravartin* and the other kings (mentioned above).

26-27. The *Patra-paṭṭa* is fit for (the class of kings known as) the *Paṭṭadhara*, the *Ratna-patta* for the *Pārshṇika*, and the *Pushpa-paṭṭa* for the *Paṭṭabhāj*: this has been said by the ancient (authorities).

28. The *Pushpa-mālya* (flower garland instead of a diadem) is prescribed for the *Prāhāraka* and the *Astragrāha* (classes of kings).

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[1] See lines 88 -91 where the shapes of these crowns are referred to.

29. The *Kuntala* and the *Makuṭa* should be fit for the queens of the *Chakravartin* (class of universal monarchs).

30. The *Keśabandhana* should be fit for the queens of the *Adhirāja* and the *Narendra* (classes of kings).

31-32. The *Dhammilla* and the *Makuṭa* are said to be fit for the queens of the classes of kings known as the *Pārshṇika*, the *Paṭṭadhara*, the *Maṇḍaleśa*, and the *Paṭṭabhāj*.

33 The *Alaka* and the *Chāḍaka* are fit for the queens of the (kings known as the) *Prāhāraka*, and the *Astragrāha*.

34. The height of the crown (in all cases) should be equal to, twice, or thrice the length of the face.

35. (The height of the crown) of Brahmā and Rudra should be twice the face less one-fourth.

36. (The height of the crown) of the other gods also should be less than twice the face by one-fourth or one-half.

37. (The height of the crowns) of the *Kinnaras* and the *Yakshakas* should be equal to their face, or one-and-one-half of it.

38. (The height of the crowns) of all the female deities should be twice their face.

39. The width (lit., length) of all the *Makuṭa* (crowns) should extend along the extremity of the hair (on the forehead) from ear to ear (lit., from one earring to the other).

40. The width of the crowns (lit., ornaments, of the head) at the bottom should be equal to the length of the face.

41-42. The width of the *Makuṭa* (crowns) at the top should be less than that (i.e., the width at the bottom) by one-eighth or one-sixteenth, the length of the crest extending from the upper extremity of the middle portion.

43-44. The width of the *Karaṇḍa* crown at the top is said to be one-half or one-third of the width at the bottom.

45. All the crowns should be made gradually tapering from bottom to top.

46. The height of the crowns of the *Bhauma* (i.e., *Sārvabhauma* class of) kings should be equal to the base (*bāhu*) of their head.[1]

47. (The height of the crown) of the *Mahārāja* should be less than that height by one-sixteenth part.

48. (The height of the crown) of the king called the *Narendra* should be less by two parts (out of the sixteen parts).

49. The height of the crown of the *Pārshṇika* (class of kings) is said to be a half (of this height of sixteen parts).

50-51. The height of the *Makuṭa* crowns of the queens of the *Chakravartin* and the *Adhirāja* (classes of kings) should be equal to the girth of the head, or three-fourths or one-half thereof.

52. (The height of the crowns) of all the other queens is said by the wise (architects) to be equal to the length of their face (between the ears).

53. The height of the *Dhammilla* and the *Alaka* crowns should be less (than that of the *Makuṭa*, ? the length of the face) by one-fourth, or one-half.

54. The expert (architect) should make the measurement of the remaining (crowns) as said before.

55-56. The height of the *Paṭṭa* (diadem or turban) should be one-third of the girth of the head : such should be (the diadem) of the *Paṭṭadhara* (class of kings) whose diadem (*paṭṭa*) should cover the head.

57. The height of the diadem (*paṭṭa*) of the king *Maṇḍaleśvara* should be one-fourth (of the girth of his head).

58-59. The height of the diadem (*paṭṭa*) of the king called the *Paṭṭabhāj* should be one-sixth of the girth of his head.

60. Thus is described the measurement of all (the crowns) ; their ornaments will be stated here.

[1] Compare line 39 ; the term, *bāhu*, means the base of a right-angled triangle, here implying the distance between the ears.

61–66. It (the *Makuṭa* crown of the *Chakravartin*) should be furnished with garlands made of ten leaves (rows or strings) of gold and other metals; there should be five hundred, one thousand, two thousand or two thousand and five hundred *nishkas*[1]; the number of gold pieces (in the crown) is stated to be of three varieties from the smallest to (i.e., including the intermediate, and) the largest; they are stated to be (distinguished) in connection with the four kinds of coronation of the *Chakravartin* (class of monarchs), namely, the *Prāpta* (i.e., *Prathama*), *Maṅgala*, *Vīra*, and *Vijaya*.

67. The number of gold pieces in the *Makuṭa* crown of the queen should be a half of those (in the king's).

68-69. The number of gold pieces in the *Makuṭa* crown of the *Adhirāja* is stated to be up to two thousand, classified as before into three varieties.

70–73. For the *Makuṭa* crown of the *Narendra* (class of kings) the number of gold pieces in the smallest (the intermediate) and the largest (crowns) should begin from five hundred and end at one thousand and five hundred, the increment being by five hundred; for (this class of) kings in particular they (those gold pieces) should be attached to the fillet (*paṭṭa*) around the head (*bera*).

74–76. The number of gold pieces in the *Śirastra* crown of the *Pārshṇika* (class of kings) is stated to begin from four hundred gold pieces (*nishka*) and end at twelve hundred, the increment being by four hundred, there being three series in each of the smallest and the other (the intermediate and the largest) types.

77-79 The number of gold pieces in the *Paṭṭa* crown of the *Paṭṭadhara* (class of kings) in the smallest, (the intermediate), and the largest types should begin from three hundred gold pieces (*nishka*) and end at nine hundred, the increment being by three hundred.

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[1] Ordinarily it implies a kind of gold coin which was the currency in the Vedic period; but it may imply generally jewels although in all other places (cf. lines 67, 69, 73, 76, etc.) the terms used as synonyms of *nishka* are one or the other name for gold.

80-82. The number of gold pieces in the *Paṭṭa* crown of the king *Maṇḍaleśa* in the three types ending at (i.e., including the smallest, the intermediate and) the largest type is said to begin from two hundred gold pieces and end at six hundred, the increment being by two hundred.

83-85. The number of gold pieces to be attached to the *Paṭṭa* crown of the *Paṭṭabhāj* (class of) kings in the smallest, (the intermediate) and the largest types should begin from one hundred gold pieces and end at three hundred, the increment being by one hundred.

86-87. The height of the *Makuṭa* crown of the kings from top to bottom should extend to the extremity of their hair, and the height of the crest jewel thereof should be made in addition above the former (height).

88-91. The *Jaṭā*, the *Makuṭa*, the *Keśabandha*, and the *Kuntala* should be triangular (*tripuṭa*)[1] in plan; the *Kirīṭa* and the *Mauli* should be somewhat like the ear; the *Karaṇḍa* should resemble the beak of the peacock; the *Śirastra* should look like the bubble; the *Dhammilla* should be shaped like the creeper; and the *Alaka*, and the *Chūḍa* should be made extending from the extremity of the hair.[2]

92-94. The height of the crown of the kings being divided into twenty-six parts, the height of the ploughshare-like fillet (*phāla-paṭṭa*) should be five parts, the crest (*chūḍa*) a half of that (i.e., two-and-a-half parts); the height of the ear (*pura*) should be five parts, and the height of (lit., width) of the bottom (i.e., lower portion) six parts.

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[1] It may imply the three-fold pocket, three-fold cup, three-fold leaf, three-fold cavity, or three-fold casket.

[2] The exact plans of the last two crowns are not specified; *alaka* means a curl of hair, and *chūḍ* implies the crest of a cock or peacock: these may supply the required plans.

95-99. The height of the crowns of the gods being divided into twenty parts, the (height of the) side ear (*pārśvapūrita*)[1] should be nine parts, and the height (lit., breadth) of the beak (*tuṇḍa*) six parts; the front (upper) fillet (*agra-paṭṭa*) should be one part and a-half, and the threefold band (*vetraka*) three-fourths part; the fillet (*paṭṭa*) at the upper region should be half a part, and the three-fold band above one-fourth part; above that the lotus (*padma*, cyma) should be made of one part, and the height of the bud (*kuḍmala*) of two parts.

100. This (height) should cover the distance between the base of the crown and the crowning fillet, and above that should be made the crest jewel.

101. The height of the crest jewel (*śikhā-maṇi*) is said to extend from the band (*vetra*) to the bud (*kuḍmala*).

102-103. Along the height of the lower band one part should be covered with garlands of jewels, (and) all the circular members should be discreetly fitted thereto.

104. All the other regions should be furnished with the wave-shaped mouldings.

105. The interior of the wave-shaped mouldings should be adorned with flowers and jewels.

106. The two parts of the ear (*pūrita*) should be adorned with the carving of crocodiles.

107. The interior of that should be furnished with jewel bands (*ratna-bandha*) surrounded with (ornamental) leaves (*patra*).

108. The jewel band (*ratna-bandha*) should be made in the front, and on the outside it should be surrounded with creepers (*vallikā*).

109. In the region of the face part of the crocodile should be carved the garland of creepers (*valli*) together with its projection.

110. At the front and back there should be a continuous string of crocodiles.

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[1] Compare lines 106 (*pūrita*), 117—119 (*pūri*, *pārśva-pūrita*, *pṛishṭha-pūri*) 141 (*karṇa-pūraka*), 115 (*karṇa-patra*).



111. The band portion of the (*Mauli*) crown should be ornamented with garlands of pearl (looking) like creepers.

112-113. The height of the front (forehead) fillet (*paṭṭa*) being divided into four parts, the fillet-band (*paṭṭa-bandha*) should be one part (which should be) adorned with all jewels.

114. Below that the half-moon (crescent) above the forehead should be adorned with garlands of jewels.

115. The upper portions of the ears should be furnished with ear-leaves and ear-flowers.

116. The garlands suspending therefrom should be ornamented with all jewels.

117. The crest jewels should be engraved in the portion below the middle of the earring (*pūri*).

118. The four ear-rings (*pūri*) should be made above the two ears and at their (two) sides.

119. The back ear-ring (*pūri*) should be made in the upper portion of the back of the head.

120-122. The disc(*chakra*)-like ornaments should be made at the middle and bottom of the back (of the head); the width of the head-disc should be one-third the girth of the head; it (the disc) should be made (perfectly) circular, and all jewels should be engraved thereon.

123. Such should be the crowns (known as) the *Kirīṭa* and the *Makuṭa*; they should be adorned with all ornaments.

124. There should be an upper band in the crowns (known as) the *Jaṭā* and the *Chūḍa*, and in their forepart should be furnished the fillets, etc.

125. The crest jewels should be made in the middle, and the garlands should be suspended along the sides.

126. The intervals of the *Jaṭā* (matted hair) should be adorned with flowers, and the rest should be made as before.

127. In the very same way should be made the (crown known as the) *Keśabandha*.

127-129. With regard to the *Mauli* crown there should be a pretty band in the middle, above that should be made the surrounding (lit., bee-shaped) locks of hair in rows; the rest should be made as before, and it should be adorned with all ornaments.

130. In the very same way should be made the *Kuntala*, and it should be furnished with the middle bands.

131. The bees should be carved all over and the peculiarities thereof should be as before.

132. The crest jewel should be made over the top of the head, and therefrom should rise the bud (*kuḍmala*).

133. The total breadth of the buds should cover one third of the width at the forepart.

134. It should be generally shaped like the *pināka* (the bow or club of Śiva), and the rest should be made as before.

135. Round the width there should be three, four, or five rows (*valaya*, lit., bracelets) of bands furnished with lotuses.

136. As said before, the upper portion should be adorned with bud ornaments, but there should be no garlands.

137. The rest should be made as before; thus are described the *Karaṇḍa* and the *Śirastraka* (crowns).

138-139. The width at the forepart of the *Dhammilla* crown should be one-third of the girth of the head; the width at its bottom should be three-fifths of the width (at the top).

140 It should be furnished with three-fold bracelets, but there should be made no crest jewel.

141. All jewels should be engraved thereon, but there should not be any ear-rings (*karṇa-pūraka*).

142. But there should be furnished the crest (of the head), and the rest should be made as before.

143. In the very same way should be made the *Alaka* and the *Chūḍaka* crowns; but there should be a jewel band at the base.

144-145. The width at the top, bottom, and middle is said to be uniform, (or) the width at the upper portion of the height (i.e., the top) should be one-third of that (at the base).

146. It should be adorned with the nine gems, and the rest should be made as before.

147. Its general features should be made of fillets resembling the ploughshare (*phāla-paṭṭa*).

148. It should be furnished with leaves and jewels, etc.; this is known as the *Patra-paṭṭa* (leaf-diadem).

149. The same when adorned with the nine gems (instead of the ploughshare fillets) is (called) the *Ratna-paṭṭa* (jewel-diadem).

150. The same when furnished with various flowers is known as the *Pushpa-paṭṭa* (flower-diadem).

151. The *ashṭa-maṅgalas* (lit., eight auspicious things) should be attached to the crest of all (the crowns).

152. The *śrīvatsa* mark should be made in the middle, and below that a full pitcher (*pūrṇa-kumbha*).

153. On its sides should be the chowry (*chāmara*) and the lamp (*dīpa*), and the umbrella (*chhatra*) should be made at the top.

154. The mirror should be fixed on the right and the conch (*śaṅkha*) and the cross-like (*svastika*) figures on the left.

155-156. In the same way the crowns of the kings being furnished with a neck-fillet (*gala-paṭṭa*) would be suitable for the (respective) queens of all the kings.

157. All the crowns should be adorned with all ornaments.

158-159. The height of all the flower-crowns (*Pushpa-makuṭa*, i.e., *paṭṭa*) should be equal to the girth of the head; three-fourths or one-half thereof should be adorned with all flowers.

160. There should be four corners on the four sides, or they should be circular (round) in shape.

161. They should be shaped like the *Makuṭa*, the *Karaṇḍa*, or the *Kirīṭa* (crowns).

162. Similarly crowns (*Mukuṭa*) should be made properly (lit., according to the rules) without any flowers.

163. In case of the kings (*Paṭṭadhara* and *Paṭṭabhāj*) who put on the *Paṭṭa* diadems, the flower-fillet should be made over a half (of their crowns).

164. In case of the other (petty) kings, a garland should be worn (instead of a crown) on the head[1].

165-166. The *Prāpta* (i.e., *Prathama*, first), the *Maṅgala* (auspicious), the *Vīra* (heroic), and the *Vijaya* (victory) : these are said to be the four kinds of coronation for the *Chakravartin* (class of the universal monarchs).

167-168. The flower-coronation (*pushpābhisheka*) of the three descendent kings (i.e., the *Mahārāja*, the *Narendra*, and the *Pārshṇika*) also (i.e., in addition to the *Chakravartin*)[1] should be performed after the first coronation according to the rules of the science (*śāstra*) stated before.

169-171. During the coronation ceremonies of the kings the chief architect (*sthapati*) in particular together with the assistants (*sthāpaka*), the Brāhmans, and the wise should perform the preliminary rites (*aṅkurārpaṇa*, lit., sewing the seed), and carry out all other ceremonies ending at the concluding purification (*adhivāsa*).

172. After this abovementioned purification (*adhivāsa*) ceremony the filling up of the pitchers with water should be taken up.

173-174. The king (to be anointed) should be seated on the throne in the north of the sacrificial pavilion (*maṇḍapa*) and then the anointing proper (coronation) should be commenced.

175. The pitchers should be filled with water from rivers or seas and also with curdled milk.

176-177. The preceptor and the chief architect (*sthapati*)[2] should finish the ceremonies of anointing with water amidst the

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[1] There are the four higher classes of kings who are allowed to put on real crowns see the preceding lines).

[2] Compare line 184 where the chief architect and the preceptor refer to the one and the same person, see also lines 190-191.

chanting of the *Atharvan* and the *Sāman* hymns, and the other scriptural (*āgama*) incantations (*mantra*).

178-179. Then after the sacrifice, the *tripuṇḍraka*[1] figure should be marked with the sacrificial remains with the help of the *kusa* grass on the forehead (of the king) according to rules.

180. Thereafter he (the king) should put on a very fine silk (*dukula*) cloth, marked with the figure of the goose.

181. The white sandal (solution), musk, and saffron should be besmeared over his body.

182. He should then be adorned with the sacred thread, the upper garment (*uttarīya*) and all other ornaments.

183. The coronation hall should be decorated with all ornaments.

184. The preceptor architect (*sthapati-guru*) should get the crown and the lion-throne brought down there.

185. The central theatre should be sprinkled with the five products of the cow (*pañcha-gavya*).

186. The leading priests should then hold up the crown.

187-188. Thereafter the king should be seated there, being furnished with the throne, the ornamental (*kalpa*) tree, the arch (*toraṇa*) the crest (*niryūha*), and other ornaments.

189. The king should sit together with the queen on his left side.

190-192. On an auspicious moment of good constellation of stars, both the chief architect (*sthapati*) and his assistant (*sthāpaka*) should place the crown adorned with jewels on the head of the king, amidst the pronouncement of benediction (*svasti*) and all other auspicious sounds.

193-194. The garlands made of grass (*durvā*) and the *madhuka* flowers should be placed over the chest and round the arms; a point should be marked on the forehead with curdled milk, and the eyes should be adorned with the dye (*añjana*).

[1] The figure consists of three lines of ashes.

195. Afterwards he should be presented with the (holy vapour of the burning of) incense, and lamp, and with the holy rice.

196. The barley plant, grass, and the bark of *plaksha* tree should be placed on a plate (*bhājana*).

197. The ceremony of waving lights (*nīrājana*) (before the king) should be performed according to the rules of the scripture (*śāstra*) by the old experienced and learned ministers.

198–199. After the pronouncement of benediction by those well-wishing aged people, and by the auspicious women the liquid turmeric mixed with raw rice grain (*akshata*) should be sprinkled (over the king and his consort) by the twice born.

200. After this the king should mount up the great elephant (*airāvata*).

201–204. The lustre of the pearls and other jewels on the crown of the king mounted on the back of the elephant should illuminate all sides; and the rays of his moon-like face with the fillet (*paṭṭa*) on the forehead should brighten all the directions.

205–206. He (the king) should be fanned from all sides with the royal chowries and be attended on by the pretty women all round him.

207–208. He should be also shaded with the four (royal) umbrellas, furnished with leaves (*pallava*) and the mirror, etc., made of jewels.

209–210. He should be surrounded with banners, flags, and pitchers made of gold.

211–212. Afterwards (i.e., with such a gorgeous procession) he should ride round the city amidst singing, dancing, and all other musics.

213. They (the procession) should thus circumambulate the city with all auspicious proclamations.

214. At the time of entering into the palace the king should be blind-folded.

215–216. Corns, rice pudding, milk, cloths, earth, and all auspicious and inauspicious things should be placed (lit., thrown) before him by the wise man (? architect preceptor).

217-219. The learned man will ascertain whether there would follow a famine or plenty of things, by observing which thing is touched by the (blind-folded) king proceeding unassisted with his hands; he should also ascertain the strength (prowess), victory, fame, and fortune (of the king himself).

220. If the rice porridge and rice, etc., be touched, there will be always an abundance of food stuff (in the kingdom).

221. If the heap of rice corn is touched by the (royal) hand there will be plenty of food.

222. If gold, iron, jewels and other precious metals be touched, it indicates that the subjects will prosper.

223. If the sword or other weapons be touched, it bespeaks of his prowess.

224. It would be unfortunate for the whole kingdom if any inauspicious things be touched by the king.

225. Silver and other things would increase (in the country) if they be touched by the king.

226-227. The *Prāpta* (i.e., *Prathama*), the *Maṅgala*, the *Vīra* and the *Vijaya*: these four kinds of coronations mentioned before are thus described.

228-229. All those (four) coronations are meant for all the kings. And what are known as the *Kāmya* (desirable), the *Nitya* (daily) and the *Naimittika* (occasional), etc., should be the installations for the gods.

230-231. All these should thus be carried out according to the directions of the *śāstra* (guide books) as prescribed by the scriptures (*Vedas*), the traditions (*Purāṇas*), all the great sages headed by *Mānasāra* and others, and by those who are learned in the science of architecture (*śilpa-śāstra*).

Thus in the *Mānasāra*, the science of architecture, the forty-ninth chapter, entitled:

The description of the crowns and coronation.

CHAPTER L

THE BODILY ORNAMENTS AND HOUSE FURNITURE

1-2. Now the description of all the bodily ornaments of the gods and the kings, and the articles of furniture will be stated fully but briefly in order according to rules.

3-4. The *patra-kalpa*, the *chitra-kalpa*, the *ratna-kalpa*, and the *miśria* (mixed): these are stated to be the four kinds of ornaments; they should be made by the wise (architect).

5. All those *kalpa* (types of ornaments) are fit for all the gods.

6. All those except the *patra-kalpa* are suitable for the king called the *Sārvabhauma* (i.e., *Chakravartin* or universal monarch).

7. The *ratna-kalpa* and the *miśra-kalpa* are fit for the kings *Adhirāja* and *Narendra*.

8. The *miśra-kalpa* is fit for all the other kings.

9. The ornaments adorned with leaves and creepers are known as the *patra-kalpa*.

10-11. Those which are adorned with leaves, creepers, paintings, all jewels, and calyxes are known as the *chitra-kalpa*.

12. The ornaments adorned with flowers and jewels (? flowers made of jewels) are called the *ratna-kalpa*.

13. Those which are adorned with leaves and (made of) jewels are known as the *miśra-kalpa*.

14–16. The *hāra* (chain)[1] should be around the neck, the *skandhamālā-avalambana* (pendant) for the neck-chain, and for the arm[2] should be the *keyura* and *kaṭaka* (mid-armlets), the *supūrima* (up-armlet), the *valayadāman* (upper string armlet), the *prakoshṭha-valaya* (wrist bangle), and *maṇi-bandha-kalāpaka* (string bracelet for the wrist).

17. The jewelled rings should be for all the fingers except the middle one.

18. The *udarabandha* (belly-band) should be round the middle belly, and above that should be the *stana-sūtra* (breast-string).

19. There should be one chain on the side of the sacred thread, covering the breasts.

20–21. The *pura-sūtra* (front string) is known to be suspended from where the sacred thread is bound down to the *kaṭi-sūtra* (hip-chain).

22. The *hāra* (chain) should be suspended over the chest from the upper neck down to the (part above the) heart.

23. The *valaya* (armlet) should be put on the root of the arm, and the *dāman* (string bracelet) should be worn round the armpit, (*kaksha*).

24. The pendant should be suspended from the root of the arm and should be connected with the *keyūra* and the *kaṭaka* (mid-armlets).

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1 Compare line 22. A chain of 108 strings is called the *hāra*, and a half-chain of 64 strings is styled the *ardha-hāra* (*Bṛihat-saṁhitā*, LXXXII, 32).

2 Compare lines 23-26.

25. The *keyūra* and the *kaṭaka* should be worn round the middle of the length of arms.

26. Above that (middle-arm) should be worn the *purima*; the crocodile (*makara*) ear-rings should be put on the ears.

27-28. The *kaṭi-sūtra* (hip-chain) should be put on the waist, along the breadth of which should be a belt (*paṭṭikā*) extending as far as the sex-organ whereon should be worn an ornament resembling the lion-face.

29. As an alternative there may be worn a jewelled band projecting up to and covering the sex-organ.

30. Five sapphires suspended with chains should be put on along the sides and the middle (i.e., front part of the waist).

31-32. A piece of fine (silk) cloth of the yellow colour should suspend down to the ankle (*nalaka*), or a piece of skin or bark as a skirt may be worn down to the knee.

33. A belt should be put on round the knee-cap, and the feet should be ornamented with the net ornaments (*jāla*).

34. All the fingers except the fore-finger should be adorned with rings.

35. On the upper body should be worn the chain, etc., and the pendant may be optionally put on the two sides.

36. The string (*dāman*) should be suspended by the middle; this is known as the *chinnavīra*.[1]

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[1] This ornament is elsewhere described as passing over both shoulders and hips, crossing and fastening in the middle of the breast and the back (see Rao's elements of Hindu Iconograpyhy, I. XXXI, M. F. A. Bulletin, no. 152, page 90, and Coomaraswamy, J. A. O. S., 48, 3, page 255),

37. These are said to be the ornaments for the gods and the *Chakravartin* (class of universal monarch).

38. Both the *Chakravartin* king and the god Vishṇu should be adorned with the *vana-mālā* (lit., wild-garland, made of wild flowers, etc.).

39. There should not be put on any chain above the two breasts of the *Adhirāja* and the *Narendra* (classes of kings).

40. All other kings should leave out the *keyūra* and the *kaṭaka* (armlets).

41-42. The part above the ankle of all the gods should be ornamented with the serpent (shaped) belt (*kaṭaka*), and the feet should be adorned with anklets (*nūpura*).

43-44. The crocodile (*makara*) ear-rings should be put on the ears; or there should be two gold rings (*tāṭaṅka*, on the ears), and the rest should be as before.

45. The ornaments of the body have thus been stated. The external decorations (i.e., articles of furniture for the house) will now be described.

46-56. I shall briefly describe the features (and measures) according to rules in order of the lamp-post (*dīpa-daṇḍa*), the fan (*vyajana*), the mirror (*darpaṇa*), the baskets made of leaf (*parṇa-mañjūshā*), etc., the palanquin (or swing, *dolā*), the balance for the kings to be weighed; the leaf-like seal (*patra*) and the pen (*karṇa* for *kalama*, i.e., *lekhanī*) for marking the commencement of a year, the cages for the musked deer (cat), the parrot (*śuka*), the *chātaka* bird (who lives on rain drops), the *chakora* bird (a kind of partridge said to be fed on moon-beams), and the duck (*marāla*), the nests for the pigeons, and the cages for the peacocks (*nīla-kaṇṭha*), the nests for the francoline partridge (*tittiri*), the cages for the wag-tails (*khañjarīṭa*), the nests for the

cock, the cages of the mungoose, the cages of sparrows (*chaṭaka*) and boars (*godhāra*), and the cages for the tiger[1].

57-59. The nine kinds of height of the lamp-post should begin from eleven or twelve *aṅgulas* and end at twenty-seven, or twenty-eight *aṅgulas*, the increment being by two *aṅgulas*.

60-63. As an alternative the height of the lamp-post may be measured in cubit in order. The nine kinds (of height) consisting of three in each of the smallest, and the other (the intermediate, and the largest) types, should begin from one cubit and end at two cubits, the increment being by three *aṅgulas*, or they may begin from one cubit and end at nine cubits, the increment being by one cubit.

64-67. According to some, the lamp-post in front of the house should be proportionate to the height of the building ; the nine kinds

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[1] The stables for the horse and the elephants are not included here as they have been referred to as forming parts of premises. The cow-sheds are not specified on the premises, nor are here happily included. No provision is made for dogs and several other domesticated animals also.

It should be noted that the bigger articles of furniture have been separately described. Cars and chariots are illustrated under chapter XLIII, bedsteads and swings under chapter XLIV, seats and royal thrones under chapter XLV. And the couches, etc., may be further illustrated from the Buddhist texts :

Benches are made to accommodate three persons (*Chullavagga*, vi, 13-2). Divan is a separate piece of furniture (*Chullavagga*, vi, 14-1; *Mahāvagga*, v, 10-3). The *āsandi* variously translated as large couches, chair and cushions (ibid. vi, 14-1 ; v, 10-3). Couches are covered with canopies (*Mahāvagga*, v, 10-3). Mention is made of various chairs, namely, rectangular chairs (*āsandaka*), sofa with arms to it (*sattaṅga*), state chairs (*bhadra-pīṭha*), cushioned chairs (*piṭhikā*), chair raised on a pedestal (*etaka--padaka-pīṭha*), chair with many legs (*amalaka-vantika-pīṭha*), cane-bottomed chair (*kochchha*), and leaning board (*phalaka*).

Carpets, rugs, pillows, and curtains, etc., are also mentioned : "coverlets with long fleece, counterpanes of many colours, woollen coverlets marked with thick flowers, matresses, cotton coverlets dyed with figures of animals, rugs with long hair on one or both sides, carpets inwrought with gold or with silk, rich elephant housings, horse and carriage rugs, panther and antelope skins, large and crimson cushions" (*Mahāvagga*, v, 10-3); pillows of the size of man's head and body ; bolsters are of five kinds as stuffed with wool, cotton, bark, grass, and leaves; floor-cloth, mosquito-curtain, handkerchief, spittoon are also mentioned.

(of height), consisting of three in each of the smallest, and the other types, should extend up to the entablature (*prastara*), platform (*vedikā*), the neck (*grīva*), beam (or pillar, *daṇḍaka*), nose (or vestibule, *nāsikā*), abacus (*phalakā*), lotus (*padma*), pitcher (*ghaṭa*), or up to the top of the pinnacle (*stūpikā*).

68-70. The width of the lamp-post should begin from one or two *aṅgulas* and end at five or six *aṅgulas*, the increment being by two or half an *aṅgula*; this measurement is said to be taken in the standard (*mātra*) *aṅgula* (of three-fourths inch).

71. It (the lamp-post) should be made of both wood and metal (iron), but the latter will be preferable.

72-74. The nine kinds of width, consisting of three in each of the smallest and other types, of the abacus (*phalakā*)-post (*daṇḍa*) at the bottom, are said to begin from one *aṅgula* and end at five *aṅgulas*, the increment being by half an *aṅgula*.

75-76. The width at the bottom being divided into three, four, five, six, seven, or eight (equal) parts, the width at the top should be one *aṅgula* less.

77. The lamp-post at the top should be like the forepart of the palm of the hand (*pāṇyagra*), and at the bottom it should be furnished with the lotus-seat (*padmāsana*).

78-79. It should end at the abacus (*phalakā*) at the top, and it should be also adorned with the tenia (*tāṭikā*), etc., otherwise it may end at the pillar or pitcher (*vāri*), and at the top it should be furnished with a bud (*kuḍmala*).

80-81. The width of the lotus seat (*padma*, at the bottom) should be two, three, four, five, or six times the width of the lamp-post (*daṇḍa*).

82. The abacus (*phalakā*) should be thrice the (width of the) post, or the same as said for the lotus seat (*padma*).

83. All the pillars (*aṅghrika*) and the pitchers (*vārikā*) in the middle of the lamp-post (*daṇḍa*) should be constructed in pairs.

84. The movable lamp-post should be quadrangular, octagonal, or circular.

85-88. The width of the stationary lamp-post should be (also) measured in the standard (*māna*) *aṅgula* : the nine kinds of width of the stationary lamp-post are said to begin from three or four standard *aṅgulas* and end at nineteen or twenty *aṅgulas*, the increment being by two *aṅgulas*.

89. It (the stationary lamp-post) should be made of iron, wood, or stone.

90-91 The height of the aforesaid lamp-post (*daṇḍa*) being divided into three, four, five, or six equal parts, the measure of its thickness should be greater by one part.

92. At the bottom (of the stationary lamp-post) should be made a platform, lotus-seat, or pedestal.

93. The abacus and the other ornaments may be optionally furnished, or the (stationary) lamp-post may be made straight (i.e., plain, without the upper ornaments).

94-95. Its bottom should be made quadrangular, octagonal, or perfectly circular, the top should be similarly shaped, and the whole post should be made tapering from the bottom towards the top.

96. The post at the upper part should be measured and shaped as aforesaid at one's discretion.

97. The measurement and the characteristic features of the fan-post will be described now.

98-99. The width of the (fan) post at the bottom should begin from six or seven *aṅgulas* and end at twelve or thirteen *aṅgulas*, the measurement being taken (as before) in the standard *aṅgula*.

100. It (the width at the top) as usual should be one or two *aṅgulas* less (than at the bottom).

101. Thus are described the bottom and the top ; it should be a little thinner at the middle.

102. The post should be round and be furnished with the chain ornament (*hārita*) at the top.

103. The bottom should be shaped like a bud (*kuḍmala*), and furnished with some ornament like a lotus-seat.

104-105. Above that (the bottom) should be made the spiral (*bhrama*) post, and it should be of the same height as the main post, and its width should be one-third or one-fourth of the width of main post.

106. At its top the post should be furnished with the chain ornament and the lotus together with a small bud.

107. Such should be the fan-post made with wood or iron.

108. The fan should be furnished with a piece of leather made by the cobbler (*charmakāra*).

109. The two outer surfaces of the fan should be adorned with the images of Śrīrūpa (Vishṇu) and others.

110. The wise (architect) should inscribe those (images) with colours and (melted) metallic substance.

111. Thus is described the fan. The mirror will be described now.

111-114. The nine kinds of width of the mirror are said to begin from five or six *aṅgulas*, and end at twenty-one or twenty-two *aṅgulas*, the increment being by two *aṅgulas*.

115-116. The rim of the mirror should begin from one *yava*, and end at nine *yavas*, the increment being by one *yava*[1].

117. The mirror should be quite circular with its rim a little raised.

118. The glass should be bright on the inner side, and the outer side should be covered with linings (*rekhā*, paintings).

119. The images of Lakshmī and other female deities, as also creepers should be painted on the outer surface.

120. The length of the nail (*kīla*) at the bottom of the glass should be one-third (the thickness) of the mirror.

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[1] Six, seven, and eight *yavas* make one *aṅgula* (see chapter II).

121-122. The lotus pattern should be made in conformity with the interspace up to a half of the (total) length, and the remainder should be the length of the nail, and its width should be one-third (of the length).

123. The width of the nail at its bottom should be one-sixteenth.

124. It (the whole mirror) should be made discreetly in conformity with its board (or abacus, *phalakā*) and its handle (lit., the post).

125. The brass founders should make that abacus at the corner of the mirror-mark.

126. The wise (architect) should get made its post of wood or iron (metal).

127-128. Its length should be equal to the (width of the) mirror, or greater by one-fourth one-half or three-fourths, or twice.

129. Its width should be one-fourth the width of the mirror.

130. The bottom should be furnished with the lotus-seat, and the top ornamented with the abacus (*phalakā*), etc.

131. The wise architect should adorn it with all ornaments.

132. Thus is described the mirror: this varies according to the castes (? colour).

133-135. The nine kinds of breadth (i.e., width), consisting of three in each of the smallest and the other (two) types of the leaf-baskets should begin from three or four *aṅgulas* and end at nineteen or twenty *aṅgulas*, the increment being by two *aṅgulas*.

136-138. Its height should be equal to the breadth, or greater by one-fourth, one-half, or three-fourths; it should be quadrangular, circular, or rectangular, and it should be made with iron or brass.

139-140. It (the basket) when made of wood should be one-half or one-fourth (*aṅgula*) in measure (of width), and the rule about the height is that it should be one-third or one-fourth (of the width).

141. There should be made one, two, or three chambers (in the wooden basket).

142. It should be discreetly bound with iron so that it may be sufficiently strong (and beautiful).

143-144. The height of the oil basket (*taila-mañjūshā*) should be greater than the height of that (leaf) basket by one-fourth or one-half.

145. The rest should be made as before; this varies according to the colour and the shape.

146. The wisest (architect) should likewise make baskets for all ornaments.

147-149. The breadth of the cloth-basket (i.e., wardrobe) should begin from one cubit and end at two cubits, the increments being by three *aṅgulas*; optionally (i.e., preferably) the best measurer should measure this in the last (i.e., largest) size.

150. The height thereof should be equal to its breadth (and so on as before), and its shape too should be quadrangular, etc., as before.

151. The rest of the cloth-baskets, etc., should be made at one's discretion.

152. The characteristic features of the swing (*dolā*) for gods and men will be described now.

153-154. The twenty-one kinds of height of the pillar thereof should begin from three cubits and end at eight cubits, the increment being by six *aṅgulas*.

155-156. The width of the pillar is desired to begin from five or six *aṅgulas* and end at thirteen or fourteen *aṅgulas*, the increment being by one *aṅgula*.

157. The pillars, as described before, should be adorned with some beautiful shapes.

158. It should be furnished with one or two walls (*bhitti*) with measure in conformity with the aforesaid.

159. The transom (*vājana*) should be made sufficiently strong from above one pillar to another.

160. With due regard to the strength two iron rings (*valaya*) should be attached to the transom.

161-162. The width of the board (*phalakā*) should begin from one span and end at twenty-one *aṅgulas*, the increment being by one *aṅgula*.

163-164. Its length should be greater than the breadth by one-fourth, one-half or three-fourths, or twice; and its thickness should be discreetly made (proportionate).

165. Mirrors should be fixed to the portico (*bhadra*) made at the front, the back, and the middle.

166. At the two sides should be made doors (*vāraṇa*) below which should be attached the axle (*aksha*).

167. The swing boards (*phalakā*) should be attached below that, and the whole (swing) should be adorned with all ornaments.

168. The bar (*argala*) should be made of iron, and be furnished with ropes (*rajju*).

169. There should be a space of one cubit above the ground (*vāstu*) up to the swing board.

170. Above that (board) up to the transom (*vājana*) is stated to be the length of the bar (*argala*).

171. At the two ends of the bar (*argala*) there should be two projected parts (lit., tops, *agra*) in order to connect the swing board with the rings (at the transom).

172. Thus is described the swing. The characteristic features of the balance (*tulā*) will be described (below).

173-174. The length of the scale-beam (*tulā*), consisting of the smallest, (the intermediate), and the largest types, should begin from two cubits and end at three cubits, the increment being by three *aṅgulas*.

175-176. These are said to be the nine kinds (of length fit) for the (balance beams of the nine) kings beginning from the *Astragrāha* and ending at the *Sārvabhauma*. The width thereof should be three or four *aṅgulas*.

177. The width (of the beam) should decrease by one part from the middle towards the (two) ends.

178. It should be (thus) made tapering from the middle towards the two ends whereat should be fixed two rings (*valaya*).

179. The length of the middle pivot (lit., tongue, *jihvā*) should be equal to the (whole) length of the beam (*daṇḍa*).

180. The width of the tongue at the root should be one-third of the width of the beam.

181–183. The width at the forepart of the pivot (lit., tongue) should be one-eighth, or less by one-sixteenth, or one-half of that (i.e., less by one-thirty-second part than that at the bottom); otherwise it (the pivot or tongue) should be made tapering from the bottom towards the top which should be pointed like the end of the needle.

184. One-half of that (dimension) should be the upper pivot (lit., projection, *bahala*), and there should be furnished a small hole at the root thereof.

185. At its fore (i.e., upper) part it (the hole) should be nailed up to the arch (-like device) connecting the post on the (two) sides.

186. Therefrom (i.e., from the nail-joint) the height of the arch should be greater than the (lower) pivot (lit., tongue) by one-fourth.

187. A ring (*valaya*) should be fixed at the top (centre) of the arch in order to suspend (the balance therefrom).

188. The width of the scale (*patra*) is stated to be equal to the length of the tongue.

189. Its (of the scale the) surface should be made a little deep, circular in shape, and half an *aṅgula* in thickness.

190. Equal (in depth) to that (thickness) should be made eight or four holes (at equal distance) at the rim (lit., tip, *oshṭha*) (in order to connect the scales with the beam).

191. It (the balance) should be furnished with two scales (pans) which should be made of iron.

192. The (whole) balance should be discreetly made of wood, or iron (metal).

193. The tongue and the arch should be always made of iron (metal).

194. The two (scales) should be connected to the ends of the beam with bar-like chains (*argala*) (through the holes at the rim of the scale).

195. Thus is described the balance, the rest should be made at one's discretion.

196. The characteristic features of the middle palm-print (seal) of the right hand of the kings are described (here).

197 The height of the leaf (-like seal) should be four *aṅgulas*, and the height of the pedestal (thereof) two *aṅgulas*.

198. The length of the handle (*nāla*, lit., stock) is stated to be twelve *aṅgulas*.

199. The breadth of the leaf-like seal (*patra*) should be two *aṅgulas*, and the breadth of the pedestal (*pīṭha*) the same (i.e., two *aṅgulas*).

200. The height of the face portion (*vakra*) is ascertained to be a half of the pedestal of the seal.

201. The breadth of the handle (*nāla*) should be half an *aṅgula*, and the handle should be firmly fixed to the pedestal.

202. The wise (architect) should make the rest (of the handle) pointed like a fine needle.

203-204. The width of the third part at the bottom should be one-half of the width of the handle (*nāla*), and the width of the third part above that should be one-third (of the handle).

205. The rudder-like pen (*karṇa*) which should be perfectly round should be fixed along the handle at the root of the leaf-like seal.

206. It should be beautifully decorated with gold lines which should be smooth but well marked (lit., like the erect hair on horripilation, *pulaka*).

[1] Compare line 49; it looks like a seal made of the palm-print and renewed by the kings at the beginning of a new year.

207-209. Brahmā is the presiding deity of the leaf-like seal (*patra*), Vishṇu of the pedestal (*pīṭha*), Rudra of the handle (*nāla*), nd Sarasvatī cf the pen (*karṇa*) : these are the presiding deities ; thus should be constructed the pen (*karṇa*)[1].

210. The nests and cages cf all (domestic animals) may be made movable or stationary.

211-213. The nine kinds (cf width), consisting of three in each of the smallest and the other two types, should begin from one cubit and end at forty-eight *aṅgulas* (i.e., two cubits), the increment being by three *aṅgulas*: these should be the width of the nests for the musked cat(deer)[2].

214-216. A half or three-fourths of that (width), equal to that, or greater than that by one-fourth or one-half: these should be the five kinds of height (thereof) known as the *śāntika*, etc.; this (height) should extend from the ground to the end of the entablature (*prastara*), the head (*mastaka*), or the pinnacle (*śikhā*).

217-219. The nine kinds (of width), consisting of three in each of the smallest and the other (two) types, should begin from nine *aṅgulas* and end at twenty-three *aṅgulas*, the increment being by two *aṅgulas*: these are said to be the width of the cages for parrots.

220. The height thereof should be made as before, with regard to all the varieties of the breadth.

221-223. The nine kinds (of width), consisting of the smallest and the other types, should begin from seven *aṅgulas* and end at twenty-three *aṅgulas*, the increment being by two *aṅgulas*: these should be the widths of the cages for the *chātaka* and the *chakora* (partridge) birds[3].

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[1] See lines 49, 196-209; the context seems to imply that there was a seal-like device with fixed pen with which the kings used to make certain marks on the new year's day in particular.

[2] The dimensions in this and several other cages appear to be too small to accommodate the ordinary type of animals for which the nests are meant.

[3] See page 500.

224-225. The length thereof is said to be two, three, or four times the breadth; and the height should be as before.

226. The same cage shaped in the *daṇḍaka* plan[1] will be fit for the ducks.

227. The same with square shape is suitable to be the cage for pigeons.

228-231. The nine kinds (of breadth), consisting of three in each of the smallest and the other types, should begin from twenty-five *aṅgulas* and end at seventy-three *aṅgulas*, the increment being by six *aṅgulas* : these should be the nine kinds of breadth of the cages for the peacocks. The width (i.e., length) should be equal to that (breadth), and the height should be as before.

232-235. The nine kinds (of breadth), consisting of three in each of the smallest and the other types, should begin from five *aṅgulas* and end at twenty-one *aṅgulas*, the increment being by two *aṅgulas*: these should be the breadth of the cages for the female wag-tails. Its length should be equal to the breadth ; it should be square in shape ; and the height should be made as before.

236-239. The nine kinds (of breadth), consisting as before of the smallest and the other types, should begin from seven *aṅgulas* and end at twenty-three *aṅgulas*, the increment being by two *aṅgulas*: these are said to be the nine kinds of breadth of the cages for the male wag-tails (*khañjarīṭa*) ; it should be square (lit., of four equal corners), and its height should be as before.

240-242. The nine kinds (of breadth), consisting of the smallest and the other types, should begin from fifteen *aṅgulas* and end at thirty-one *aṅgulas*, the increment being by two *aṅgulas* : these should be the breadth of the cages for the fowl (cock), and their height should be as before.

243-245. The nine kinds (of breadth), consisting of three in each of the smallest and the other types, should begin from eleven *aṅgulas* and end at twenty-seven *aṅgulas*, the increment being by two *aṅgulas*;

[1] See chapter IX, and the writer's *Dictionary*, pp. 256, 183.

the breadth (width) of the cages for the mungoose should be made (thus) as aforesaid.

246-248. The cages for sparrows and francoline partridge should be made as said before (of equal dimensions); the aforesaid nine kinds of breadth should begin from nine *aṅgulas* and end at twenty-five *aṅgulas*, and the height should be as before.

249. The same being a square of equal sides (breadth) is fit to be the cage for the boar (*godhāra*).

250-252. The nine kinds (of breadth), consisting of three in each of the smallest and the other types, should begin from one cubit and a half and end at three cubits and a half, the increment being by six *aṅgulas*: these are said to be the nine kinds of breadth of the cages for the tiger.

253. The height (thereof) should be as before, and it should be made quadrangular with sides of equal breadth.

254. It should be quadrangular; there should be a (square) wall (on each side), and it should be furnished with four columns (at the four corners).

255. The door should be made at the middle (of the side), and there should be a single panel (for the door).

256-257. The height should be divided into six equal parts, (of which) the pedestal (*pāduka*) should be one part, the height of the pillar (*pāda*) should be four parts, and the upper board (*paṭṭikā*) one part.

258-259. Or of the eight parts of the height, the height of the pedestal should be one part, the height of the pillar six parts, and the upper board one part.

260. There should be four pieces of wood at the four corners connected with the bottom and the upper board at the top.

261. The base and the top of the pillars at the four corners should be consolidated with *kankar*.

262. Bars should be horizontally fixed at the top and the bottom of the pikes made with projection.

263. The width of the pillar should be one, two, three, or four *aṅgulas.*

264-265. The width (i.e., thickness) of the plinth of the upper board (*paṭṭikā*) should be discreetly made two, three, four, five, six, or seven *aṅgulas.*

266. The windows should be opened on the four sides from top to bottom.

267. It should be furnished with bands (*vetra*) lengthwise, and be adorned with openings of the elephant-eye-shape.

268. The pillars may otherwise be quadrangular in shape ; and the whole should be ornamented as aforesaid.

269. The same (structure) should be furnished with disc-shaped top.

270. All the nests (and cages) should be adorned with all ornaments.

271-273. The cages for the *chātaka* and the *chakora* birds (partridges) should be shaped in the *daṇḍaka* plan ; two, three, four, five, or six small compartments should be made lengthwise ; and the rest should be made as before, and they should be adorned with all ornaments.

274-277. The height of the cage for the parrots should be divided into eight parts, (of which) the pedestal should be one part, the height of the pillar four parts, the height of the upper board (*paṭṭikā*) one part, and the upper crest two parts ; the rest should be made as before, and it should be adorned with all ornaments.

278. The same should be furnished with a front porch (*bhadra*), equal to, or one-half or three-fourths (in dimension).

279. There should be two or three pillars on the front furnished with entablatures[1].

280. The width of the middle band (*nīvi,* lit., a piece of cloth round the woman's waist) should be four parts, and the surrounding balcony one part.

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[1] *Mattavāraṇi* is a kind of entablature, cf. chapter XVI. 19, and see the writer's *Dictionary*, p. 492.

281. It should be furnished with pentroofs all round, and be adorned with sectional towers.

282–283. The same may optionally have a pinnacle (*kūṭa*) at the top, with an extra height of five parts (of which) the height of the spire (*śikhā*) should be two parts, and the height of the spherical roof (*śikhara*) three parts.

284. There should be four vestibules (*nāsi*) on the four sides adorned with all ornaments.

285. One or two parts at the bottom of the four sides should be furnished with porticos (*bhadra*).

286–287. The breadth of the portico should be one-third, three-fourths, or three-fifths of the breadth of the nest.

288. It should be adorned with all ornaments, and the rest should be made as before.

289. Such should be the cage for the parrot, or it may be made as said before (by the ancients).

290. The following (ornaments) should be suitable for the gods, the Brahmans, the Kshatriyas (lit., kings), the Vaiśyas, and the Śūdras.

291–294. The anklets for the feet, crowns, small coins-(string), ear-rings, bracelets, girdles, strings, bangles, head-gears, bracelets with small bells, and ear-ornaments.

295–298. The *keyūra* and the *tāṭaṅka* (both armlets for the upper arm) in particular; ear-ornaments, crest jewels, small fillets, the garland of stars and the half chains, and the gold strings round the two breasts.

299–302. The jewel garland, the fine (silk) cloth, and the bark cloth; the gold jacket (dress, *kañchuka*), and the garland made of gold; the long (suspending) chain, the crest ornaments, etc., the ear-ornaments (*pūrima*), and the hair-pinnacle.

303–306. These are said to be the all kinds of ornaments, both for the daily and occasional use of Brahmā, Vishṇu, Maheśa (Śiva),

Śakra (Indra), all the gods of the quarters, the Kinnaras, the Gandharvas and all other groups of gods, Durgā, Śachī, Gaurī, Chāmuṇḍā and other (demonesses), Sarasvatī, Gaṇapati, and Kārtikeya (born of six mothers)

307-308. These (ornaments) are also suited to all the kings, and the kings of kings (emperors), and to people of the four castes, and to their consorts.

309-310. And as for the cages of the birds, if they be made as aforesaid, it would increase prosperity, but if they be made otherwise, it would be the source of bad luck.

Thus in the *Mānasāra*, the science of architecture, the fiftieth chapter, entitled :

The description of the bodily ornaments and house-furniture

CHAPTER LI

THE TRIAD

1. The characteristic features of (the images of) Brahmā, Vishṇu, and Maheśa (i.e., Śiva) will be described now.

2-4. Gold, silver, copper, stone, wood, stucco (*sudhā*), grit (*śarkarā*, sugar, gravel soil abounding in stony fragments), glass (*ābhāsa*), and terra-cotta (lit., earth): with these nine kinds of materials, consisting of three in each of the three varieties, namely, the best, etc., (i.e., the intermediate, and the inferior)[1] should be made the images.

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[1] A critic (Dr. Coomaraswamy) whatever might be his other accomplishments cannot obviously claim much knowledge of Sanskrit language and an intelligent study of the architectural texts when he challenges (J. A. O S. 48, no. 3, page 251) that *ābhāsa* is not used here as a material. In support of his contention he cites Śrī Kumāra *Śilparatna* (LXIV, 2-6, Ashutosh Mookerjee Memorial volume) and Rao's interpretation (Elements of Hindu Iconography 1, 52) of the Suprabhedāgama's use of *ābhāsa* as a method It is needless to add that those who know Sanskrit will agree that in the present context *ābhāsa* cannot mean any thing but one of the nine materials so distinctly mentioned elsewhere also (compare LII. 15-16). *Ābhāsa* must not be confused with *chitrābhāsa* which latter implies painting as in line 12 (and chapter LVI. 15) as also in *Śilparatna*, chapter LXIV. 4-5 (see note under lines 8-12). (For details of sculptural materials referred to in a dozen early atuhorities, see the writer's *Dictionary*, pages 63-67)

5-7. Both the movable and the stationary images should be made with these nine materials: (of these) the metallic substances (i.e., gold, silver and copper), as well as stucco, grit, glass, and terra-cotta are stated to be the materials for the movable images; and the rest (i.e., stone and wood) are known to be for the immovable images.

8-12. The *chitrāṅga*, the *ardha-chitrāṅga* and the *ābhāsāṅga*: these are said to be the three kinds (of images): that of which all the limbs are (made) visible is called the *chitra* (high relief); that of which half the limbs are visible is called the *ardha-chitra* (middle relief); and that of which one-quarter limbs are visible is called the *ābhāsa* (low relief or bas-relief); but the *ābhāsa* may be otherwise made (painted) on a tablet or a wall with five colours[1].

13-14. What is (called) the *chitra* (high relief) is stated to be the best, the *ardha-chitra* (middle relief) is fair, and the *ābhāsa* (bas-relief) inferior: thus should be always made (the images).

15-16. It has been said by God himself that the high relief is meant for all successes (i.e., spiritual benefit, worldly gain, enjoyment, and salvation), the middle relief for enjoyment and salvation, and the low relief for success in enjoyment (only).

17. The stationary and the movable: these are stated to be the various (two) kinds of idols.

18. The movable idols should be used on some festive occasion; (while) the stationary ones may be used for all purposes if so desired[2].

19. It is good to use for idols the metallic substances (i.e., gold silver, and copper) and for the pedestal (seat, *pīṭha*) glass (*ābhāsa*).

20-21. These are said to be the usual (lit., perpetual) materials for all idols of the Vaishṇava and the other system (i e., Śaiva, etc.) in the erect, sitting, recumbent, and dancing postures.

[1] Compare *Śilparatna* (LXIV. 3-4) where the reliefs are defined, but this work which is a summary of the *Mānasāra* has altogether omitted the alternative use of *ābhāsa* as low relief and elaborated the details of painting only.

[2] With an amended reading this line may mean that the best kinds of materials should be used for the movable idols and all kinds for the stationary ones (for different meanings of *utsava* see the writer's *Dictionary*, pages 80-81.)

22. Of those (nine) materials the idols and their (respective) pedestals should be made of different materials.

23. When the idols are made in the erect, sitting, or recumbent posture their pedestals should be separable and made of stone.

24. (But) when) made of stucco, terra-cotta and flanked grit all (the idols and their pedestals) should be made inseparable.

25. The materials of the idols (and pedestals) are thus described. The description (*dhyāna*) of the images (*mūrti*) will be stated (now).

26. It (the image of Brahmā) should have four arms, four faces, two legs, and eight eyes.

27. It should be furnished with eight ears, and the body should be of one (symmetrical) form.

28. The limbs should be measured in the largest type of the *daśatāla* system [1].

29. It should be (made) in the erect or sitting posture, and clothed in bark.

30. The hands should be in the boon-giving and the refuge-offering poses, and it (the image) should be adorned with matted hair and the diadem.

31-32. The water pot (*kuṇḍikā*) and the rosary should be held in his two left hands; and the two right hands should either hold sacrificial ladles (*sruk-sruva*), or be in the refuge-offering and the boon-giving poses.

33. The flower or the ear-rings marked with the crocodile (*makara*) should be put on the two ears.

34. There should be put on the sacred thread, the upper garment etc., and a belt all round the belly.

35. It should be adorned with the chain put over the upper neck, and with garlands round the arms.

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[1] In this system the whole length of an image should be ten times the length of its head including the face; the total length is divided into 124, 120, or 116 equal parts in the large, intermediate, and small sizes, which are proportionately distributed over the different parts of the body, (for details see chapter LXV, and the writer's *Dictionary*, pages 221-222, 228-240;

36-37. It should also be adorned with the armlets, *keyūra* and *kaṭaka*, etc., and the wristlets (*maṇibandha*); and there should be three armlets (*kaṭaka*) including the one round the arm (*nalaka*).

38. There should be the chain, etc., and the plates for the hip, and the loin-cloth connected with the thighs (*chalana*, lit., leg).

39. The jewel rings should be on the (fingers of the) two hands, and the net ornament of precious stone on the feet.

40. The *tilaka* (point) mark of circular shape should be on the forehead made with the sandal and the *agaru* fragrance.

41. The whole body should be of gold colour, and the bark strip should be put on up to the arm (*nalaka*).

42-43. The Saktis (energy personified, consorts) should be on the two sides, Sarasvatī being on the right and Sāvitrī on the left, and it should be adorned with all ornaments

44. Thus is described the image of Brahmā (lit., the Grandfather): the wise (architect) conversant with the science (of sculpture) should make (the image, accordingly).

45. It (the image of Vishṇu) should be furnished with four arms, two eyes, and the crowns known as the *kirīṭa* and the *makuṭa*[1].

46. It should put on yellow clothes, and the whole body should be given the bright blue complexion.

47. Some marks should be made all over the chest and above those should be made the *Srīvatsa* mark.

48. The limbs should be measured in the largest type of the *daśatāla* system[2].

49. It should hold a martial weapon (*kaṭaka*), or the club optionally touching the ground.

50-52. The upper one of the two left hands should be optionally in the boon-giving pose, and the upper one of the two right hands in the refuge-offering pose, and the other right hand should hold the disc (*chakra*), and the other left hand should hold the conch-shell (*pāñcha-janya*).

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[1] For details see chapter XLIX.

[2] See note under line 28.

53. The ear-leaf (*karṇa-patra*) should fully cover the ear, and the crocodile-shaped ear-rings should be also put on the ears.

54. It should be adorned with a smiling face, a straight nose, and elongated eyes.

55. It should put on a chain over the neck, and also the sacred thread and the upper garment.

56. There should be a jewel belt round the belly, and the arms should be adorned with garlands.

57. It should put on lower armlets, belt round the waist, upper armlets, and the ear-ornaments (*pūrita*) made of precious stones.

58. The fingers should be adorned with rings of precious stones, and the net-ornaments should be put on the feet.

59. The suspending yellow clothes should reach the thigh or the knee.

60. The nimbus (*śiraśchakra*, *lit.*, head-disc) should be put at the back of the head, and all the limbs should be gracefully ornamented.

61. The beautiful wild flower garland should extend down to the two legs.

62-64. Thus should be made the image of Vishṇu (proper); it should be accompanied by the consorts (Śaktis) on the two sides; (the images of) Lakshmī (Śrī) and the Earth goddess (Bhūmi) should be optionally on the right or left when they are made in the stationary or the moving pose; they may be carved in the erect or sitting posture (also).

65. It (the image of Śiva) should be furnished with four arms, three eyes, and be adorned with the matted hair and the *makuṭa* crown.

66. It should be decorated with the tiger's skin cloth above the knee and thigh.

67. It should be decorated with a piece of suspending cloth round the waist, and the body should be beautifully red in complexion.

68. It should put on a chain over the neck hanging down to the chest, and there should be a suspending garland round the forehead.

69-70. There should be a jewel belt of the elephant's cheek pattern (*karaṭa*), or a very tight (*rudra,* terrible) belt (? around the waist); and a leaf ornament, or plain belt, or jewel belt round the belly.

71. It should be decorated with the lower armlet, a hip-chain, th upper armlet (*keyūra*), and the ear-ornaments (*pūrima*).

72. The root of the arms should be decorated with garlands and with all (other) ornaments.

73. The long leaf-ornament should be on the left ear and the crocodile ear-ring on the other (i.e., right) ear.

74-75. The upper right hand should be in the refuge-offering pose, and the upper left hand in the boon-giving pose; the other left and right hands should hold the antelope (*hariṇa*) and the hand-drum (*draṅka*) respectively.

76-77. The left side of the *makuṭa* crown should be furnished with the (crescent) moon-mark and the right side with the sun flower; the (figures of) serpents and the Ganges should be between the matted hairs.

78. In the interspaces of the crown should be the (mark of) grass (*dūrvā*), gold vermilion, and the lotus (*pushkara*).

79. The face should be furnished with one eye in the middle of the forehead.

80. The *kālakūṭa* (poison) should be shown on the left side of the neck.

81. There shonld be the sacred thread and the upper garment, and the fingers should be adorned with rings of precious stones.

82. It (the image) should be in the erect or the sitting posture, and the feet should be adorned with anklets.

83. Thus should be the image of Rudra which should be accompanied by (the image of) Pārvatī on the left side.

84. The limbs should be measured in the largest type of the *daśatāla* system.

85. The limbs of all the goddesses (of those gods) should be measured in the intermediate type of the *daśatāla* system.

86-87. The lotus seat (*padma-pīṭha*) and the *Mahā-pīṭha* type of pedestals[1] should be made for the (three images of the) Triad; they (the pedestals) should be furnished with ornamental sheds or arches, and with the ornamental (*kalpa*) tree[2].

88. Thus should be made the pedestals for the images of Rudra and Vishṇu according to rules.

89. The three gods should be carved (lit. meditated on) as adorned with all ornaments.

90. Whatever of all those (gods) are not mentioned here should be made according to the rules of the science (*śāstra*) of sculpture.

91-94. As has been said by great sages, the artists should make the stationary or movable images of Brahmā, Vishṇu, and Śiva together with all the limbs in the largest type of the *daśatāla* measurement.

Thus in the *Mānasāra*, the science of architecture, the fifty-first chapter, entitled:

The description of the Triad.

[1] For details see chapter XIII.

[2] For details see chapter (XXXIV, XLVI), XLVIII.

CHAPTER LII

THE PHALLUS

1. The rules for measurement and the characteristic features of the phallus (emblem of Śiva) will be described now.

2-3. *Śaiva*, *Pāśupata*, *Kālamukha*, *Mahāvrata*, *Vāma*, and *Bhairava* : these are the epithets for a set of six phalli.

4-5. *Samakarṇa*, *Vardha-māna*, *Śivāṅka*, and *Svastika* : these are (another set of) four phalli, fit for the (worship of) the Brahmans and others (i.e., the Khattriyas, the Vaiśyas, and the Śūdras).

6-7. The *Samakarṇa* is fit for the Brahmans, the *Vardhamāna* for the Kshatriyas, the *Śivāṅka* for the Vaiśyas, and the *Svastika* for others.

8. All the phalli may, however, be made for the Brahmans, there will be no defect in that.

9. The *Śivāṅka* and the *Svastika* phalli also are said to be fit for the Kshatriyas.

10. The *Svastika* and the *Śivāṅka* are fit for the Vaiśyas also.

11-15. The phalli may be measured in comparison with the measurement of the adytum (*garbha-griha*) proper, the door, the width of the main edifice, the height of the base, similarly the height of the

main pillar; they may be also measured in cubit or in comparison with the height of the worshipper (*yajamāna*); these are said to be the general rules for measurement; each method may admit of different varieties: from the largest (including the intermediate) to the smallest should be the three sizes of measurement in each case.

16–19. The (breadth of the) adytum being divided into nine parts, each of those parts may be the height of the phallus; according to some, each of those nine parts should be again divided into nine parts so that (the height of) the phalli may be of eighty-one kinds, consisting of nine in each of the smallest, (the intermediate), and the largest sizes.

20–21. The height of the phallus is said to be of the smallest size when it is one-half of the (width of the) adytum; it is of the intermediate size when it is three-fourths thereof, and it is of the largest size when it is equal to the breadth of the adytum: these are the three kinds of height of the phallus.

22. Thus should be ascertained the height of the phallus in comparison with (the breadth of) the adytum.

23–25. The height of the door proper or its width being divided into nine equal parts, each of those parts should be the height of the phallus; the smallest and other sizes should be (distinguished) as before; the measurement of each being again of three kinds, there will be eighty-one kinds of phalli.

26. In comparison with the breadth of the edifice it (the various height of the phallus) should be (ascertained) in the same way as stated in connection with the adytum.

27–30. In comparison with the base the phallus is of the largest size when it is equal to the base, of the intermediate size when it is three-fourths thereof, and of the smallest size when it is one-half of that: these are said to be the three kinds of phalli; again it (the base) being divided into nine parts, each of those parts is said to be (the height of) a phallus, and thus there will be nine phalli; each variety should again be (distinguished) as of the smallest, (the intermediate), and the largest sizes.

31-34. (In comparison with the main pillar) the height of the pillar being divided into nine parts, there will be nine kinds of measurement for the phallus; each of those parts being again divided into four parts, and each of the latter being the height of the phallus, there will be thirty-six kinds of phalli; they will be of the smallest, (the intermediate), and the largest size, and everything should be made as aforesaid.

35-39. The height of the main edifice being divided into nine parts consisting of three in each of the three sizes, namely, the smallest and others, there will be, thus, nine kinds of phalli with those nine kinds of height. According to some, the height of the edifice should be divided into eighty-one parts, each of which should be the height of a phallus, so that the height of the phallus will be of eighty-one kinds; the phalli are desired to be (in this case also) of the smallest, (the intermediate), and the largest sizes as before.

40-42. The nine kinds of height (of the phallus) consisting of three in each of the three sizes, namely, the smallest, etc., should begin from one cubit, and end at nine cubits, the increment being by one cubit.

43-44. The height of the nine phalli as before should begin from three-fourths cubit, and end at seven cubits less one-fourth, the increment being by three-fourths of a cubit.

45-46. Again, the height of the nine phalli should begin from one cubit and end at four cubits-and-a-half, the increment being by half a cubit.

47-48. The height of the nine phalli as before should (again) begin from one-fourth cubit, and end at two and one-fourth cubits, the increment being by one-fourth cubit.

49. The *Jāti*, *Chhanda*, *Vikalpa*, and *Ābhāsa*: these are the four kinds (of phalli).

50-51. There will (thus) be thirty-six kinds of height for the phallus according to the cubit measurement, consisting of three kinds

in each of the three sizes, the smallest, etc., of the four classes, namely, the (*Jāti*), *Chhanda*, and others.

52-53. The nine kinds of height of the phallus should begin from eleven *aṅgulas*, and end at twenty-seven *aṅgulas*, the increment being by two *aṅgulas*.

54-55. The nine kinds of height of the phallus should (again) begin from twelve *aṅgulas*, and end at sixty *aṅgulas*, the increment being by six *aṅgulas*.

56-57. The nine kinds of height of the phallus should (again) begin from twenty-five *aṅgulas*, and end at seventy-three *aṅgulas*, the increment being by six *aṅgulas*.

58. Each of these *aṅgula* measurement should be (of three sizes, namely,) the smallest, (the intermediate), and up to the largest.

59-64: The nine kinds of height of the phallus in comparison with the height of the worshipper should extend up to his sex organ, navel, heart, breast, root of the arm, chin (jaw), nose, eye, and his full length; or the height (of the worshipper) being divided into nine parts, each of which should be the height of the phallus; and they should consist of three in each of the three sizes, the smallest, etc.; thus there are known to be the ninety-one kinds of phalli in comparison with the height of the worshipper.

65. The phalli are thus (primarily) of nine kinds in number, but they are (actually) made (lit. installed) in many varieties.

66. But the measurement of height in cubit may be (generally) used for all kinds of the phallus.

67-68. The measurement of fifteen *aṅgulas* which is (the measurement) prescribed for the nine phalli should begin from fifteen *aṅgulas* and end at seventeen *aṅgulas*.

69-70. An extra height of three-fourths of a cubit should be given above all the heights, especially with regard to the five phalli

71. This is meant for the single (individual) phalli, when all of them are installed in one temple.

72. But when all the phalli are installed in many (temples) the (extra height of) three-fourths of a cubit (*karṇa*) need not be given.

73. Two *karṇas* (half a cubit of extra height) should be made in phalli in group, and three *karṇas* (three-fourths of a cubit) in phalli installed individually.[1]

74. Thus is described the height of the phallus ; its width will be described here.

75. The width of phalli in group (*bahu-liṅga*) should be three, four, up to five *aṅgulas*.

76-77. As an alternative the height being divided into three, four, and five parts, the width of the phalli in group (*bahu-liṅga*) should be one of those parts.

78. The *Nāgara*, the *Drāviḍa*, and the *Vesara* : these are known to be the three (principal) styles.

79. The width of the *Eka-liṅga* (phalli installed singly or individually) is said to be six, seven, or eight *aṅgulas*.

80. The width of the uniform (*sama*) phallus should be nine, ten, or eleven *aṅgulas*.

81-82. Similarly the width of the *Eka-liṅga* is (also) described as twelve, thirteen, or fourteen *aṅgulas*.

83-84. Fifteen, sixteen, and ten *aṅgulas* are (also) known as the width of the uniform (*sama*) phalli.

85-86. Eighteen, nineteen, and twenty *aṅgulas* : these are the three kinds of width of the (same) phallus.

87-88. Twenty-one, twenty-two, and twenty-three *aṅgulas* : these are (another) three kinds of width of the phallus.

89-90. Twenty-four, twenty-five, and twenty-six *aṅgulas* : these are (another) three kinds of width of the phallus.

91-92. Twenty-seven, twenty-eight and twenty-nine *aṅgulas* : these should (again) be (the three kinds of) width of the phallus.

93-94. Thirty, thirty-one, and thirty-two *aṅgulas* : these are alternately known as the three kinds of width of the phallus.

[1] The lines 69—73 appear to be the result of some confusion.

95. Each of those measures should be of nine kinds, consisting of (three in each of) the smallest, (the intermediate), and up to the largest sizes.

96. These are the nine kinds of phallus, of each of the *Nāgara* and other (i.e., the *Drāviḍa* and the *Vesara*) styles.

97–98. As an alternative the height being divided into four, five, or six parts, the width of the single phallus should be one of these parts.

99. Thus are known to be the three styles, the *Nāgara* (northern), the *Drāviḍa* (southern), and the *Vesara* (eastern).

100–103. Two, three, or four parts being made for the desirable length, those parts should be increased by one respectively for the *Vesara* and the other (i.e., the *Drāvida*, and the *Nāgara*) styles; the breadth thereof and the three sizes, namely, the smallest, etc., should be discreetly (i.e., according to the aforesaid proportions) made by the intelligent (architect).

104. The height of all the phalli in group (*bahu-liṅga*) should exclude the height of the Brahmā portion.

105. In the smallest size the two portions, namely, the Vishṇu and the Rudra portions, should be equal to each other.

106–107. As an alternative the height being of nine parts, the height of the Nārāyaṇa (Vishṇu portion) should be four parts, and the height of the Śiva portion five parts: this is known as the *Vardhamāna* type.

108–109. Of the eighteen parts of the height, the Vaishṇava portion should be eight parts, and the height of the Śiva portion ten parts : this is known as the *Śivāṅka* phallus.

110–111. Of the ten parts of the height, the height of Vishṇu portion should be six parts, and the Śiva portion should be four parts : this is (known as) the *Svastika* in the phalli in group (*bahu-liṅga*).

112. In the *Eka-liṅga* class of phalli, the Brahmā, the Vishṇu, and the Śiva portions should be equal to one another.

113–114. Of the twenty-four parts of the height, the Brahmā, the Vishṇu, and the Śiva portions should be seven, eight, and nine parts respectively : this is the *Sarvatobhadra* phallus.

115–117. The *Vardhamāna* phallus too is worshipped by the Brahmans and the kings (Kshatriyas) : the height (therein) of the Brahmā, the Vishṇu, and the Śiva portions should be five, five, and six parts respectively.

118–119. The desired height being divided into four parts and the Śiva portion being greater (than the others) by one part, the phallus is fit for the (worship of the) Vaiśyas.

120–123. The height of the *Svastika* phallus being divided into one hundred parts, the Śiva portion should be sixty parts, the Vishṇu portion sixteen parts, and the Rudra (Śiva) portion should be made according to rules (i.e., twenty-four parts) : this is to be fit for the worship of the Śūdras for their prosperity.

124–127. The Brahmā portion (of the phallus) at the bottom should resemble a quadrangle, the Vishṇu portion at the middle a octagon, and the Śiva portion at the top should be circular : thus should be carved all the single (*eka*) phalli.

128–131. With regard to the phalli in group (*aneka*) it is stated that the learned architects should make the bottom (portion of Brahmā) quadrangular, the middle (portion of Vishṇu) octagonal, and the Rudra (i.e., Śiva) portion at the top circular.

132–135. Both in the single (*eka*) and grouped (*bahu*) phalli, the flutes (*dhārā*, lit., stream) made in the Śiva portion should begin from sixteen and end at one thousand, the increment being by two : this has been laid down in the sciences (*tantra*, of architecture) with regard to the *Dhārā* (fluted) phallus

136–139. The width (of the whole top portion) being divided into five, six, seven, or eight parts[1], the measure (of width) of the pinnacle of the head should be two parts (in each case) ; and that measure should be sub-divided for the flutes which increase in number

[1] Compare lines 153-158 where alternative forms are suggested for the top portion of the phallus.

by two (to a thousand) and which are made as the component limbs along the height of the top portion.

140-143. The wise architects should make the pinnacle resembling the extreme point of the wick (*vartikā*); therein should be made the image of Śiva (Tripuragha); and the leading architects should make the crescent (of Śiva) from ear to ear, which should look like an exact representation (of the half moon).

144-149. The height of the phallus for worship should be divided into ten parts consisting of one, two, three and four parts (given to the four portions), the last part being given to the characteristic base (*uddhāra*) at the bottom of that (phallus): the architect should make this for all the three styles, namely, the *Nāgara*, etc., (i.e., the *Vesara*, and the *Drāviḍa*).

150-151. It (the width) at the middle of that characteristic base should be one (i.e., equal to) or half a part of that upper portion measuring one, two, or three parts in height which should be extended down to the ground by the sides and the back.

152-155. Small ball-like devices (*piṇḍikā*) should be furnished at the side, one such ball being at the interval of one, two, or three parts; and at the back should be fittingly made the image of Vishṇu; in the same way should be made the phalli in the *Nāgara* and the other styles.

156-159. At the base (*dhāraṇa*) of the single (*eka*) or the grouped (*bahu*) phalli, a bud ornament may be made optionally in the same way as on the pinnacle; and the pinnacle portion (also) may be optionally made like an umbrella : thus should the wise architect erect discreetly (the phallus) from the bottom upwards.

160. The phalli and other deities should be installed in the different parts of all the temples as said before (by the ancients).

161. The interior of the adytum proper (central hall alone, *śuddha-garbhageha*) should be divided into seven parts.

162. The *Brahmā* plot should be in the centre, and around that should be the eight gods.

163. The *Mānusha* (human) plot beyond that should be of sixteen parts around.

164. The *Paiśācha* (demon) plot beyond that (human plot) should be of twenty-four parts around.

165. The *Brahmā* plot in the centre should be divided into forty-nine parts.

166. In the centre of the *Brahmā* plot should be marked the *Brahmā* (central) line (*sūtra*).

167. The *Vishṇu* line should be marked beyond that on the left side.

168. Beyond that line the *Śiva* line should be marked between those two (lines).

169. Thus should be the *Brahmā* and the *Vishṇu* lines, and between those should be marked the *Śiva* lines.

170. Thus should be (made) the single (*eka*) phalli which should be installed by the best architect.

171. When the phalli in group (*bahu-liṅga)* are to be installed, they should be made like the single (*eka-liṅga*) phalli.

172. In the plot of Vishṇu may be as well the single phalli or the phalli in group.

173-175. The floor of the adytum, (especially) the central portion thereof, which contains (the image) should be (perfectly) level; it would be all defective if it be higher or lower in level through ignorance; the wise (architect) should, therefore, avoid that (the unevenness of the ground) in matter of installation of all deities.

176. The idol (of a deity) is stated to be (installed) upon a single piece of stone, while the phalli should be (installed) upon four pieces of stone.

177-178. The single piece of stone to be placed (under the idol) should be of the *Nandyāvarta* form [1] and the other (i.e., the four piece-stone) should have what is called the tortoise shape: thus is known (to be made) the upper base.

[1] See Chapter IX, and the writer's *Dictionary*, pages 294—296.

179-180. Above that in continuation of the stone-piece, the height (of the base) may be optionally increased by the (addition of the) pedestal (*pīṭha*).

181-182. Thus the chief architect (*sthapati*) together with his assistants (*sthāpaka*) should instal the phalli and idols in the edifices for the phalli, the altars (*pīṭha*), and the (other) gods and goddesses.

183. The particulars of the collection of stone will now be described in full (detail)[1].

184-187. The chief architect (*sthapati*) together with the assistant workers (*sthāpaka*), the master, and his retinue, after getting up in the morning should go to a hill or a forest on an auspicious moment of good constellation, and collect stone; they should have all the good omens as stated before[2] on their sides to see on their way (to the forest).

188. (After the collection) they should place the stone on a wagon (lit., chariot) and convey it to the studio as stated before.

189-190. That piece of stone should be rejected which is covered by leaves, burnt by fire, disfigured by being fallen into a pit, or licked by the sun (shines).

191-192. The forepart (of the stone to be selected) is known to be in the east to north, and the bottom in the west to south, the face towards the ground, and the other (hinder) part lying upwards.

193-194. All the stones (to be selected), with their forepart lying towards the east, should have the right side towards the south and the left side towards the north.

195. (The stone) with the head on the north is known to have the right side towards the east, and the left side towards the west.

196. The stones with the head on the north-east should have their bottom towards the south-west.

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[1] Compare the method prescribed for the collection of wood for pillars, in Chapter XV, 251—256, pages 165-166.

[2] See Chapter XV, 257—307, pages 166 168.

197. Of those (stones) in all other corners there are no (distinct) head and tail.

198. All those stones which lie lengthwise in the four directions are known as male.

199. Those lying lengthwise in the four corners are called neuter.

200. All the huge pieces of stone keep occupying the earth and the sky.

201-203. With forepart towards the sky, the bottom towards the ground, (and the sides) towards the aforesaid direction and the north-east, if stones with such up-lifted face are to be installed, their sides should be ascertained as aforesaid; the shape thereof is stated here.

204. The stone which is of the same (uniform) shape at the bottom, top, and middle is known as male.

205. The female stone is known to have the broad bottom and the thin top.

206. The stone is neuter when it is broad at the top, thin at the middle, and broad (at the bottom).

207-208. The male stone is said to be quadrangular, and the female circular; and when it has many horns (elevations) it is called neuter.

209. That which sounds like the bell metal is called the female stone.

210. When it sounds like the jewel-box, it is known as the male stone.

211. All the stone which is soundless is known as neither female nor male (i.e., neuter).

212. When it sounds like the musical tone (*tāla*) it is called the creeper-stone.

213. That is called the tree-stone (*vṛiksha*) when it sounds like the buffalo.

214. Those (stones) which sound a half of the aforesaid should be the barley (*yava*) stone [1].

215. All those stones which are circula should be reared as grain (*śālī*).

216. The male idols (and) phallus should be made of the male stones, and the lines should be avoided.

217. Female stones should be collected for the altar (*pīṭha*, consort of Śiva's phallus) and the idols of the female deities (Śakti).

218. The neuter stones should be used for all kinds of buildings, etc.

219–220. The phalli and other idols of the twice born (the Brahmans, the Kshatriyas, the Vaiśyas), and others (the Śūdras) should be made by the wise sculptors of the white, red, yellow, and black stones respectively:

221. The stone (for the phallus and idols) of all the castes may be optionally black.

222. But the black lines in the stone for (the images of) all the castes should be avoided.

223. White and gold lines (in the stone for phalli and idols) are auspicious and conducive to all prosperity.

224. Thus is described the collection of stone; the rest should be followed as stated in the scripture (*āgama*).

225. The characteristic features of all the self-revealed (*svayambhu*) phalli will be described now.

226–227. The *Udbhuta* (revealed proper), the *Daivika* (divine), the *Mānusha* (human), and the *Gāṇava* (of the *Gaṇa* class): these are known to be the four types of the self-revealed phalli.

228. That which is installed as a self-revealed phallus is called the *Svayambhu* phallus.

229. That which is installed (i.e., given) by the gods is called the *Daivika* phallus.

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[1] It may mean foreign or of the Ionian Grecian origin (*yavana*); but the context does not admit of such an interpretation compare lines 213, 215.

230. That which is imitated by man is called the *Mānusha* (man-made) phallus.

231. That which is made by others (non-descript) is called the irregular (*ārsha*) phallus.

232. That which is worshipped by the *Gaṇas*[1] is called the *Gaṇa* (*Gāṇava*) phallus.

233. The *Udbhuta* phalli are white in colour, and the *Daivika* red.

234. The *Mānsuha* phalli are yellowish, and the *Gāṇava* black.

235. The irregular (*ārsha*) phalli are marked by joint lines, or are of the *Svastika* shape [2].

236-237. The *Udbhuta* phalli should bear the Śaṅkara shape, the *Daivika* phalli the Rudra shape (?rosary), and the *Gāṇava* phalli resemble the mountain : the shapes of the phalli are (thus) described here.

238. The base of the *Udbhuta* phalli is broad, and the top sharp (lit., thin), or equal, or larger than the base.

239. As an alternative all the phalli may be broad at the top and sharp at the base

240. The *Daivika* phalli should have the drum shape, and the *Mānsuha* phalli should have the ladle-shape.

241. The *Udbhuta* phalli may (otherwise) have the mountain-shape, and the *Gāṇava* the pumpkin-shape.

242. The phalli should be installed (lit., collected) on the bank of some holy river or mountain.

243. Such should be the phalli for public (worship) ; the rest (of the features) should be as stated in the scripture (*āgama*).

244. The characteristic features of the *liṅga-pīṭha* (the altar of the phallus) for personal worship (lit., for one self) will be described now.

245-246. The length of the phallus is said to be equal to the height of the altar, or three-fourths or one-half of it, and the width should be qual to the width of the altar.

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[1] They are stated to be the followers of the god Gaṇeśa.

[2] See Chapter IX and the writer's *Dictionary*, pages 732—738.

247. The altar is (also) installed on the bank of the river or the mountain.

248-249. White, red, yellow, and black: these are the four colours of the altars as of the phalli respectively for the four castes, namely, the Brahmans and others.

250. As an alternative all those (altars) may be black in colour and irregular.

251. That phallus and altar (lit., ground goddess) which are finely polished is called *Śambhu*.

252. In connection with the self-revealed phallus it (the corresponding altar) should be in particular of a different colour.

253. It (the altar) should be fully marked with lines (like the phallus): the rules thereof are stated now (here).

254. The phallus (? altar) which is called the *Mānusha* should be on the terrace of the mountain.

255. Any line (split), spot, or black mark (in the phallus) should in particular be avoided.

256. If it be spotted with gold spot and line marks, it is auspicious and for all prosperity.

257. The phallus which is a little raised up (elevated) above (lit., like) the temple is called *Svayambhu*.

258-259. The altar (*pīṭha*) thereof is desired to be round (circular), or elliptical at the middle (lit., navel) and along the base (lit., foot); and corresponding to (lit., following the way of) the phallus it should be a little raised up or lowered down[1].

[1] There are stated to be fifty-one places in India where elevated altars, symbolising Satī, the devoted consort of Śiva, are worshipped. More detailed account of the altar is given in the next chapter. Here the altars are mentioned because they form more component parts of the phallus, while in the next chapter they may be separate and independent elevated platform-like objects without any figure or image.

260. It (the altar) should also have the corresponding shape as of the phallus with broad top and thin base, and with all (other) forms.

261. That which possesses the natural tooth and lip marks is called the *Mānusha* (human) phallus.

262. The *Svayambhu* phallus is (also) known to be installed in the sandy bank.

263. The phallus installed on the sandy bank is desired to be neither red nor black.

264. All the *Svayambhu* phalli may be used for personal or public worship.

265. The phallus in red (in particular) should not be used for public (lit., assembly) worship.

266. It (the altar) should be made in accordance with what is stated (above) regarding the phallus, and the rest should be made according to the scripture.

267. The characteristic features of the altar (*pīṭha*) of the phallus for personal worship will be stated (below).

268. In selecting the stone (for the altar) that which is known to lead to the destruction of master should be avoided[1].

269. The stones defiled by water, fire, heat, or wind should be avoided.

270. The stones under the ground, wet (soft), spotted, and split should be avoided.

271. The stone is called female when a part of it makes a low sound (*kalita*)[2].

272. The stone which is neither male nor female and is slightly bitten is called neuter[3].

273. The stones which are either black or blue all over should be preferred; stones of other colours should be avoided.

274. The stone which is as if wrought with gold lines should be preferred.

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[1] Compare pages 532–535, 166–168. [2] Compare lines 209, etc. [3] Compare lines 211, etc.

275. The stone should be selected after such examinations.

276. The altar should be constructed with stone of such characteristic features.

277–278. The *aṅgula* (unit) measure can be taken in three ways: with the middle of the middle finger in the master's right hand, the length between the finger joints, and the width of (that) finger.

279. It (the altar) should be measured in *yava* or *aṅgula* unit[1].

280. This measure should be properly verified by the number of the planet under whose influence the master is born[2].

281. The measurement of the self-revealed (altars) should be carried out in the standard *aṅgula* unit (of three-fourths inch).

282. The verification by the six formulas known as the *āya*, etc., should be applied in connection with the measurement of height of the altar[3].

283. If the measurement of the phallus be separated (i.e., excluded, from that of the altar) it should be in connection with the *Mānusha* and the other types[4].

284–285. The breadth of the altar should begin from three *yavas* and end at twenty-five *aṅgulas*, the increment being by two *aṅgulas*.

286–287. The breadth of the altar may (again) begin from three *aṅgulas* and end at twenty-five *aṅgulas*, the increment being by two *aṅgulas*.

288. The auspicious (verification, *śubha*) by the six formulas, namely, the *āya*, etc., should be applied to (the measurement of) the corresponding dimensions (i.e., the length, breadth, height, thickness, girth, etc.)[5].

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[1] Five, six, or seven *yavas* make one *aṅgula* (see chapter II, 46—48, pages 7 8).

[2] This refers to the six formulas beginning from *āya*, with which all measures are verified, compare line 282 below, and see for other references and explanation the writer's *Dictionar* , pages 600—611

[3] Compare the preceding note and the lines 350—376.

[4] Compare lines 234, 261 etc. of this chapter.

[5] The length should be verified by the formulas of *āya* and *riksha*, the breadth by the formulas of *vyaya* and *yoni*, and the circumference, thickness, or height by the formulas of *vāra*, *tithi*, *aṁśa* or *rāśi*, etc.

289-290. The (combined) breadth (height) of the altar being divided into four parts, the measure of the phallus should be one part, and the rest the height of the altar proper.

291-292. As an alternative that (combined) height should be divided into five parts of which one part is said to be the height of the phallus, and the height of the altar should be made, as before, of the remainder by the wise (architect).

293. The breadth of the pedestal should be equal to the phallus at the middle of the forepart of the channel (*nāla*).

294. The breadth of the altar being divided into two parts, the breadth of the channel (*nāla*) should be one part.

295. The same being divided into four parts, the breadth of the forepart of the channel (*nāla*) should be less by one part (i.e., three parts).

296. According to some, it may be two out of three parts, and it should taper from the bottom towards the top.

297. (Again) of the three parts of the same breadth, one should be the breadth of the channel (*praṇāla*).

298. The surrounding water course (*vṛita-vārikā*) should be one-fourth or one-third of the breadth of the altar.

299. The width of the phallus should be equal to the breadth of the altar.

300-301. Such should be (the plan) in connection with the *Svayambhu* (self-revealed) phallus for personal as well as for public worship; the same may be (the plan) in connection with the phalli in group, but not in connection with the single phalli.

302-306. The height of the altar being divided into three parts, the height of the neck (*gala*) should be one part, or preferably the height of the neck should be two parts out of five parts (of the height of the altar); the remainder should be given to the upper and lower bands (*bandha*), the fillet (*paṭṭa*), the plinth (*janman*), and the cyma (*saroruha*): (thus) the height of the plinth should be one part, the

band (*vetraka*) also one part, equal to that should be the forepart of the cyma (*paṅkaja*, lotus), and the middle part (*kukshi*) of the cyma two parts.

307-309. Of the eight parts of the same (height of the altar) the (lower) band (*vetra*) should be one part, and equal to that the upper band; it should be furnished with the ear (*karṇ*) as before, and the upper portion should be made like the lower portion; it may be made greater or less by one-fourth of a part or whatever may make it look beautiful.

310. The length of the channel should be made as aforesaid proportionate to the breadth and height of the altar.

311. The altar should be circular (round); any other shape should be avoided.

312. There should be a hole in the (middle of the) height of the altar resembling that on the width of the phallus.

313. The peculiarity of the height of the phallus is that a belt (*veśana*) is made therein by the wise architect.

314-315. It (the altar) should (thus) be measured in connection with the phalli in group as well as the single phalli, (in fact) for all the phalli, for personal as well as public worship.

316. Jewels should be placed first (on the altar), and then the phallus should be placed thereupon.

317-318. A gold band (*bandhana*) should be inserted to the holes around the phallus; if gold be wanting it may be made with silver, copper, or iron.

319. The architect should get fixed up the phallus perfectly in continuation of the height of the altar.

320. There should be eight bands (*bandhana*) in the single phalli and the phalli in group for the peasonal and public worship.

321. Some (architects) furnish three bands with resin (*guggula*) and other materials.

322-323. Gold altars should be made for all the phalli made of jewels (precious stones), or jewel altars should be made for the phalli made of jewels as before.

324. The altar should be (generally) made of the same material with which the phallus is made.

325. The gold altar (also) should be made, and it should be furnished with the nine gems.

326. The phallus is named after the gem with which it is made.

327. In the altar or the phallus, there should be preferably (inserted) the nine gems.

328. The single phalli may be furnished with one or many ears (or corners, *karṇa*).

329–330. Thus is described the *Vajra* (diamond) phallus; its jewels will be stated here: it should be furnished with one or many of the nine gems.

331–333. The altar of the phallus which is said to be made of gold should be furnished with jewels; or the wise (architect) should make the altar with gold alone: thus is described the *Svarṇa* (golden) phallus, its characteristic features should be as aforesaid.

334. The phallus should be measured in the hand (cubit) of the priest (lit., preceptor), or in the finger (*aṅgula*) of the disciple.

335. Thereafter (i.e., after the carving) the worshipping (of the phallus and altar) should be performed as advised by the priest (lit., preceptor).

336. Now the (good) fruit of worshipping the phallus in accordance with rules will be stated (in detail).

337–338. The worshipping of the phallus near the river or the mountain leads (the worshipper) to the *Kailāśa* (a kind of heaven, being the abode of Śiva), and in this world he becomes the object of respect: it (the worship) is thus fruitful for fruition and salvation.

339. The fruit of worshipping a jewel phallus is what leads to salvation.

340. The fruit of worshipping a gold phallus is heavenly beatitude.

341-342. If the altar be made with gold, its phallus is said to be made with pearls, or with any other precious materials, or with other materials liked (chosen) by the master : this is sanctioned, and there will be no defect in it.

343-346. The short lasting phallus for temporary worship should be made of the rust of iron (*maṇḍūra*) mixed with water, or of flower or lotus, with sand rounded with hand, with rice grain mixed with molasses, or of sweet-meat (*modaka*), or ground cake (*pishṭaka*), cow-dung, or whatever else may be liked.

347-348. All these phalli too should be shaped like the ordinary phallus (as aforesaid) ; but all the details of the measurement need not be followed (for these phalli), as they are considered (lit., meditated on) to be for sacrificial purposes only (*dakshiṇakā*).

349-350. The length of the phallus should be tested by the rules of the six formulas, namely, the *āya*, etc., as is done in all other measurements ; but with regard to the self-revealed and other phalli which are furnished with natural measurement all those tests known as the *āya*, etc., need not be applied.

351-354. With regard to the height of the single phalli for public worship, the *yoni*, *āya*, *vyaya*, *bha* (*riksha*), *vāra*, and *aṁśa* should be ascertained according to the following formulas : it (the height) should be multiplied by three, eight, nine, eight, nine, and four respectively, and the products should be divided by eight, twelve, ten, twenty-seven, seven, and nine respectively[1].

[1] Compare the writer's *Dictionary* (page 600); the more usual formulas are the following :

Āya is the remainder of $\frac{\text{length} \times 8}{12}$

Vyaya is the remainder of $\frac{\text{breadth} \times 9}{10}$

Riksha is the remainder of $\frac{\text{length} \times 8}{27}$

Yoni is the remainder of $\frac{\text{breadth} \times 8}{8}$

Vāra is the remainder of $\frac{\text{height} \times 9}{7}$

Aṁśa is the remainder of $\frac{\text{height} \times 4}{9}$.

355-358. The mare, (she) buffalo, lioness, bitch, cow, (female) donkey, (female) elephant, and (female) crow : these are the eight *Yonis* in order; the ancients say that the mare, lioness, (female) elephant, and cow (lit., female bull) are the auspicious and preferable *yonis*, and the others are the inauspicious *yonis*.

359-362. The military prosperity (lit., weapon), general progress, support, general peace, increase of vigilance (lit., eye), of intelligence, of beauty, and good luck, prosperity, happiness, great increment, and plentifulness : these are the twelve respective fruits (of the twelve *āyas*).

363-366. Fruition, salvation, auspiciousness, increment of prosperity, fortune, fulfilment of wealth, enjoyment, destruction of quarrel, and friendship : these are, oh Brahman, said to be the ten respective fruits (of the ten *vyayas*).

367-370. The increased *āya* and the decreased *vyaya* should be preferable ; but the decreased *āya* and the increased *vyaya* will be the sources of death, poverty, and destruction ; therefore, the increased or equal *āya* should be chosen for prosperity.

371. Of the planets excluding the birth one, the sixth, the eighth, and the ninth planets are inauspicious (the other being auspicious).

372. All other days excluding the Saturday should increase fruition (enjoyment), strength, and wealth.

373-376. Of the *aṁśas* (parts), the *bhūsha*, *śuddha*, *dhīra*, *chandana*, *veśman*, *bhrūbandhana*, and *vīra* : these are auspicious for fruition, and salvation ; all other *aṁśas* beginning with the *taskara* (thief) if selected would destroy all prosperity.

Thus in the *Mānasāra*, the science of architecture, the fifty-second chapter, entitled :

The description of the phalli (of Śiva).

CHAPTER LIII

THE ALTAR

1. The characteristic features of the altars of all the phalli will be described (now).

2-3. Of the *Svayambhu* (self-revealed) phallus, the breadth of the altar should be three times the breadth of the phallus, or that should be equal to the width of the broadest part of the phallus.

4-6. The height of the altar of the *Svayambhu* phallus is said to be equal to the (height of the) phallus, or greater by one-fourth, one-half, or three-fourths, or twice, or thrice (as much).

7. Thus should be measured the altar by the wise (architect) in comparison with the measure of its phallus.

8. Now (will be described) the characteristic features of the altars of the phalli the measurement of which has already been described.

9-10. The breadth of the altar should be otherwise equal to the width of the phallus measured round the outside.

11-12. The height of the altar of the *Svastika* phallus should be equal to its *Vishṇu* (i.e., middle) portion, or that may be equal to the *Brahmā* (base) portion increased by one-fourth.

13. In all other phalli it (the height of the altar) may be made by the wise (architect) equal to the *Brahmā* portion.

14-15. That height (of the whole) being divided into two, three, four or five parts, the height of the *Vishṇu* portion should be greater than the (height of the) altar by one part.

16. One and a half parts out of the nine parts of the *Vishṇu* (middle) portion may (otherwise) be the altar at the base.

17-18. Thus should the altar be joined (to the phallus); its breadth being divided into three parts, one part should be the length of the channel (*nāla*), and the width of the base (*mūla*) equal to that: thus should be distributed the three parts (lit., four less one), the remainder being the width of the top (*agra*).

20-21. As an alternative the width at the forepart of the channel may be three out of five parts (of the breadth of the altar), and the length of the channel should be greater than the aforesaid by one part.

22. The same measure of the channel as aforesaid should be its width above the neck

23. The width of the straight water-course (*jala-dhārā*) should be one-third of the breadth (width) of the channel.

24-25. The width of the upper altar being divided into four, five, or six parts, the width of the surrounding water-course (*vṛita-vāri*) should be the last one part.

26-27. The width of the surrounding water-course being divided into the same number of parts (i.e., four, five or six), the width of the drip (*nimna*) including the fillet (*phaṭṭikā*) at the base should be one part.

28. Thereupon the stone of the *Nandyāvarta* shape should extend up to the *Nārāyaṇa* (*Vishṇu*) portion.

29. Thus is stated (the composition of) the height of the altar; the relative (*yaṇya*) measurement (of its component mouldings) will be described below.

30-34. Of the sixteen parts of the height (of the altar), the base (lit., the first member) should be two parts; the height of the cyma

(lotus) should be three parts, and the projection (*kshepaṇa*) above that one part; the neck (*kandhara*) should be three parts and the fillet (*kampa*) above that one part; the upper cyma (lotus) should be three parts, and the fillet (*vājana*) also three parts; and the surrounding water-course (above) should be one part: this (altar) is known as the *Bhadra* altar.

35-36. The same (altar, with this difference) that at the neck portion there should be made a torus (lit., water-lily, instead of the lotus or cyma) with projection, and optionally a round pitcher of three parts: such (an altar) is called the *śrībhadra*.

37-39. The (same with this difference that the) pitcher should be furnished with a cyma (lotus) of half a part at the bottom and the top: the wise architect should make this (lotus) of half a part at its bottom (and the top, without fail); and the rest should be as before such an altar is known as the *Śrīviśāla*.

40-41. When the pitcher is of ten parts, and the height of the cyma (lotus) four parts, and the rest be made as before, then such an altar is called the *Upapīṭha*.

42-43. The private (sex) organ may optionally be made like the base in connection with all the phalli (and the altars thereof); and that (organ) in case of the altar should end at its corner and be like a band in conformity with the (total) height.

44-45. If the aforesaid breadth, etc., be without (sufficient) projection it would be all defective; therefore, the projection must be made, and that should be given to the breadth (in particular).

46-4 . The *Nāgara* (northern) altar should be constructed for the *Nāgara* phallus; the *Drāviḍa* (southern) altar is said to be for the *Drāviḍa* phallus, and the *Vesara* (eastern) altar for the *Vesara* phallus; and the *Andhra* altar should be constructed for all the *Andhra* phalli.[1]

[1] Compare Chapter XLIII, 123—125, p. 448, where *Andhra* has been recognized as a separate style with the hexagonal shape. (See the writer's *Dictionary*, page 300.)

49-50. The private organ part of the phallus should be in conformity with the form of the phalli of the various shapes, the conformity being restricted to the shape of the top portion (only).

51-52. If the reverse be done it would cause danger and difficulties to the Brahmans and others; therefore, the temple, the phallus, etc. (i.e., including altars) should be symmetrical to one another.

53-55. The *Nāgara* altar should be quadrangular in form, the *Drāviḍa* octagonal, and the *Vesara* round: these are the (more common) shapes of altars; and the altars of the *Andhra* phalli should have the *Andhra* (i.e., hexagonal)[1] shape.

56. All these which bring forth all prosperity should be always followed by the artists.

57-60. The breadth of the altar of the *Svayambhu* phallus shou d be three times the width of the phallus; and the breadth of the temple (adytum) proper should be three times the breadth of the altar; the projection of the breadth around the outside of the temple should be one-third its breadth; but according to some, the breadth of the altar may be equal to its (? adytum's) length (i.e., breadth).

Thus in the *Mānasāra*, the science of architecture, the fifty-third chapter, entitled:

The description of the altar

[1] Compare note under line 48, and see the writer's *Dictionary*, page 300.

CHAPTER LIV

THE FEMALE DEITIES

1. The characteristic marks, complexions, and the other features of the female deities (*śakti*) will be described now.

2-3. Sarasvatī, Sāvitrī, Lakshmī, Mahī, Durgā, Manonma (na-unmādi)nī (Rati, goddess of love), and Sapta-mātṛi will be described in order.

4. All (idols of) the female deities should be made with all the materials mentioned before.[1]

5. She (Sarasvatī) should be placed on a lotus pedestal as seated in a *padmāsana* (cross-legged) posture.[2]

6. She should be (white) like pure crystal, and be adorned with pearl ornaments.

7. She should be furnished with four arms, two eyes, the *keśa-bandha* type of crown[3] (together with) the crest jewel .

8. Her fingers should be pure white, and she should put on crocodile-shaped ear-rings.

9. The bee-mark or a pearl fillet should be fixed on her forehead.

10. Her ears should be ornamented with flowers and the ear-garland made of pearls.

11. She should be ornamented with a chain over the neck and also with the pearl strings.

12. She should be furnished with the breast-bands and garlands for the arms.

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[1] See Chapter LI. 2—4, p. 516.

[2] See Chapter VII. 4; Cf. *Matsya-purāṇa*, 262, 7, see the writer's *Dictionary*, p. 351; and Chapter XLV. 11—16.

[3] See Chapter XLIX. 13—16, 21, etc.

13-14. She should be furnished with the *keyūra* and *kaṭaka* armlets, and with bracelets or bangles for the wrists, and the pearl band (for the root of the arm).

15. All her fingers from the root except the middle one should be ornamented with rings made of precious stones.

16. She should be ornamented with a knotted garment and a pendant (*nivī-lambana*) furnished with pearl-fillets.

17. She should be adorned with serpent-shaped net-ornaments for the leg over the ankle.

18. Her feet should be adorned with anklets, and the toes with rings made of jewels.

19. She should be furnished with jewel scarf and adorned with all (other) ornaments.

20-22. She should hold a mirror (*sandarśa*, ? *vīṇā*, lute) in her upper right hand and a book in her upper left hand; she should hold in the (other) right hand the rosary garland, and the goddess Sarasvatī should hold the pot in the other left hand.

23. As an alternative she may be made with two arms putting on the *kuntala* (type of crown).

24. The right hand should be in the boon giving posture and the left hand should hold a lotus.

25. She may otherwise put on the *karaṇḍa* type of crown and should be gracefully gold in complexion all over the limbs.

26. She should put on yellow clothes and similar jewels, and pearl ornaments.

27. Gold ear-rings (*tāṭaṅka*) furnished with pretty strings should be put on the two ears.

28. She should have two eyes, a cheerful face, and be adorned with all ornaments.

29-32. She should be on the (right) side of Brahmā in an erect or sitting posture, Sāvitrī being on the left side; she may be otherwise white, red, or bright blue in complexion; she should have two arms and two eyes, should be in an erect or sitting posture (as her consort), and be adorned with the *karaṇḍa*, or the *keśa-bandha* type of crown, and with crocodile earrings on the ears.

33. She should be clad in a fine silk garment or yellow clothes.

34–35. She should be adorned with all ornaments; her left hand should be in the boon-giving posture, and the right hand should hold a lotus; and the rest should be made as aforesaid.

37. Both Sarasvatī and Sāvitrī should be measured in the *daśatāla* system[1].

38. There should be a red lotus on the pedestal upon which she (Lakshmī) sits in a cross-legged (*padmāsana*) posture.

39. She (Lakshmī) has four arms, and three eyes, and puts on the *kuntala* type of crown.

40. She should be of a cheerful (lit., peaceful, *prasanna*) face (look) and her complexion should be like pure gold.

41. She should be clad in yellow clothes or a red garment.

42. Her eyes should be large and broad with a face smiling from the corner of the eyes.

43–45. The upper right hand should be in the refuge-offering posture and the upper left hand should hold a small drum; the other right hand should hold either a lotus or the rosary garland, and the other left hand should hold up a blue or red lotus.

46. (The slope of) her breasts should be plump and full, and the bee marks should be made on her forehead.

47-48. She may otherwise put on jewel fillet (on the forehead), and gold rings (*tāṭaṅka*) on the two ears, or the crocodile ear-rings with gold string (garlands) may be put on the ears.

49. She should be adorned with a pretty chain together with strings over the neck.

50 She should be adorned with jewels or gold fillet on the nipple of and round the breasts.

51. She should be clad in the *chhanna-vīra*[2] jacket made of jewels and the scarf of gold and jewels.

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[1] Compare note under line 8, Chapter LI, and Chapter LXV.

[2] A kind of jacket worn over the shoulders and hips crossing and fastening in the middle of the breasts and the back. (See Rao's *Elements of Hindu Iconography*, I, p. XXXI, M. F. A. Bulletin, no. 152, page 90, quoted by Coomaraswamy, J. A. O. S. 48, 3, page 255)

52. She should be adorned with gold *keyūra* and *kaṭaka* armlets, and jewel ear-ring-like upper armlets (*pūrima*).

53. She should put on jewel bracelets on the wrists, and the bangles (*kaṭaka*) on the wrist-joints.

54. The jewel string should be put round the buttock, and she should be adorned with jewel garlands, etc.

55-56. She should be clad in clothes made of jewel and gold and hanging down to the ankle, and there should be three pendants up to the knee-joint beautified with all the gems.

57-58. The serpent-shaped bracelets should be put on the two feet, at the top and bottom of which should be the jewel bands, and the feet should be adorned with anklets and the toes with jewel rings.

59. The arms should be fully ornamented up to the root of the arm-pits, and she should be decorated with all ornaments.

60-61. As an alternative she may have two arms, holding a small drum in the left hand and a jewel lotus in the right ; and the rest should be made as before.

62. Thus is described the Mahā-Lakshmī (great goddess of fortune) who should be installed in all edifices.

63. The ordinary Lakshmī should be made with two arms and two eyes.

64. The two hands should be raised up holding red lotuses, and she should be adorned with all ornaments.

65-66. The rest should be made as before, but the peculiarity of her is that she has two elephants on the two sides : the wise (artist) should make her in this way, and worship her.

67. She should be installed at the gate and the middle courtyard (central theatre) of all dwelling houses.

68. The characteristic features of Lakshmī on the side of Vishṇu are also described (here).

69-70. She should have two arms and two eyes, and be furnished with the *karaṇḍa* or the *keśabandha* type of crown, and should hold a lotus with the uplifted left hand, and the right hand should be in the boon-giving posture or keep hanging downwards.

72. She should be placed on the right side of Vishṇu in an erect or sitting posture.

73. All the Lakshmīs should be measured in the intermediate type of the *daśatāla* system[1].

74. She should be adorned with all ornaments and furnished with a bright gold complexion all over the limbs.

75. Thus are described the Indirās (Lakshmīs). The Earth-goddess (Mahī-Śakti) will be described now.

76-77. She should have two arms and two eyes, and put on the *karaṇḍa* or the *kuntala* type of crown, and wear fine silk clothes.

78. She should be in an erect or sitting posture on the left (right) side of Vishṇu.

79-80. Her right hand should hold up a lotus, and the left hand should be kept hanging or in the boon-giving posture; she should be adorned with a bright blue complexion all over the limbs.

81-82. She should be measured in the *daśatāla* system[2]; she should put on the crocodile earrings (on the ears) and be adorned with all ornaments; and all the rest should be as before.

83. The features of the Earth-goddess are thus described. The characteristics of Gaurī (snow-white Durgā) will be described here.

84. She should have two arms and two eyes, and be in an erect or sitting posture.

85. She should put on the *karaṇḍa*, the *keśa-bandha*, or the *kuntala* type of crown.

86-87. Her right hand should hold up a lotus, and the left hand should be in the boon-giving, the erect, or the hanging posture; and she should be in the attitude of a milk maid (?).

88. She should be clad in fine silk clothes or wear a yellow garment.

89. She should have long arms, large eyes, and a bright blue complexion, and a broad belly.

90. She should have plump breasts with high slope, and broad and well-marked buttocks.

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[1] For details see Chap. LXVI, and the writer's *Dictionary* pp. 230—233.
[2] See lines 28 and 37 of Chap. LI, and Chap. LXV.

91. Her hips and thighs should be large, and adorned with hanging girdle with small bells (*kañchī*) at the middle.

92. Her face should be broad, neck high (graceful), mouth prominent, and the whole face smiling.

93–94. She should put on the moon-lined (*chandra-rekhā*) ear-rings, and a garland surrounded with bees or a fillet on the forehead, and the crocodile ear-rings on the two ears.

95. There should also be flowers on the ears and also garlands, gold strings, and *Sumaṅgali* (lit., auspicious) chains.

96. She should be adorned with a chain over the neck, and garlands round the arms.

97. She should be adorned with the *kaṭaka* girdle round the buttock, and the *keyūra* and *purima* armlets.

98. She should put on scarfs made of red cloth as well as of pearls.

99. There should be bracelets for the wrists, and bangles for the wrist-joints.

100–101. The legs should be ornamented with the serpent-shape bangles and the feet with anklets, and all the toes should be adorned with jewel rings as said before.

102. The right leg should be bent and the left leg straight (lit., hanging).

103. The left hand should hold up flowers and be in an erect or sitting (bent) posture.

104. The right leg should be in the cross-like (*svastika*) posture, and extend to the left hand.

105. The left leg should be bent and so also the right (leg).

106. The long (hanging) hand should hold up a flower and should be in an erect posture in three parts.

107. Her limbs should be measured in the intermediate type of the *daśatāla* system.

108–109. Both the stationary and movable Gaurī (the white Durgā) should be placed on the left side of the phallus or the idol of Śiva.

110. Gaurī who is the same as Pārvatī (Maid of the Mountain) is thus described. Manonma (na-unmādi) nī (Encentress of the mind, the Love- goddess) will be described now.

111. She should have four arms, three eyes, and be adorned with the *jaṭā* type of crown.

112. Her legs should be equally in erect posture, and the goddess is measured in the *daśatāla* system.

113-114. The upper right hand should be in the refuge-offering posture and the upper left hand in the boon-giving posture; the other right hand should hold a lotus and the other left hand a water-lily

115. She should have a reddish white or bright blue complexion all over the limbs.

116. According to some, she should put on a prominent *kuntala* type of crown like (befitting) the locks of her hair.

117. A young hare should be on the left and a horse on the right.

118. She should be clad in fine silk clothes, and adorned with all ornaments.

119. She should sit occupying three-fourths of the back of her own bull (riding animal, vehicle).

120. Her right leg should be in the cross-like (*svastika*) posture, and the left leg bent.

121. The tip of her upper left hand should rest over the head.

122. The remaining features of this goddess should be as before; she should be optionally in the sitting posture; the upper right hand should be in the refuge-offering attitude and holding up a blue lotus.

123-124. Of the other two hands the left one should hold up a red lotus, and the right one a rosary garland: she should be thus made as stated by the ancients.

125. The goddess (Śakti), known as Manonma (na-mādi) nī (Encentress of the mind) of this description, should be placed in the Śiva temple.

126-127. Vārāhī, Kaumārī, Chāmuṇḍī, Bhairavī, Māhendrī, Vaishṇavī and Brahmāṇī: these are the seven mother goddesses.

128. All those goddesses should be measured in the nine *tāla* system[1].

129. The seven mother goddesses should be placed upon the *Bhadra* pedestal[2].

[1] For details see Chap. LIX, and the writer's *Dictionary*, pp. 225--230.

[2] Of which there are three classes, *vedibhadra*, *pratibhadra*, and *mañcha-bhadra* (see details in Chap. XIII, pp. 125—129).

130. Their legs should be in the recumbent posture, the left being crossed over the right.

131. They should have four arms, three eyes, and be adorned with all ornaments.

132. Like the goddesses, Chāmuṇḍī and Rudrāṇī should have three eyes.

133. Brahmāṇī and Rudrāṇī should be furnished with the *jaṭā* type of crown.

134. Vārāhī should have a face like the snout of a hog, and should put on the *kirīṭa* type of crown.

135. Kaumārī should put on the *karaṇḍa* type of crown, and Vaishṇavī the *kirīṭa* crown.

136. Chāmuṇḍī should put on the *jaṭā* type of crown, and Bhairavī a prominent *alaka* type of crown.

137-138. The two upper and lower right hands should hold the pike and the wind-followers respectively; the upper of the other (left) two hands should hold up the skull and the other hand the net.

139. Both Chāmaṇḍī and Bhairavī should similarly hold up an arrow.

140. Chāmuṇḍī should have a dark bluish complexion, and Bhairavī a red complexion.

141-142. According to some, the two upper hands of Bhairavī should be in the boon-giving and refuge-offering postures; and the other right and left hands should hold up a pike and a drum respectively.

143. She should be clad in a red garment, and the two breasts on the sides should be covered with red bodices.

144. Chāmuṇḍī should put on a garland on the head, and be adorned with all ornaments.

145. Bhairavī should be clad in dark (black) clothes, and have long and dark locks of hair.

146. Both Vaishṇavī and Vārāhī should have a bright blue complexion.

147-148. The lower right hand should hold up the disc and the (opposite) lower left hand a conch; of the upper two hands the left one should be in the boon-giving posture and the right one in the refuge-ring posture.

149-150. She should be clad in reddish yellow clothes, and should be adorned with all ornaments; thus is described Vaishṇavī.

150—152. Vārāhī should hold the plough with the (lower) right hand; her upper left hand should hold the net and the (upper) right hand should be in the refuge-offering posture, and the (other) left hand in the boon-giving posture; and she should be adorned with all ornaments.

153. She should be clad in yellow clothes; Kaumārī should have a red complexion.

154-155. The two right hands should be in the boon-giving and the refuge-offering postures, and the left hands should be placed as if on the door (?); there should be a skull in the right hand and missiles in the two left hands.

156-157. She should be clad in bright blue clothes, and adorned with all ornaments; thus are described the features of Kaumārī.

157—159. Brahmāṇī should have four faces; the two left hands should be in the boon-giving and the refuge-offering postures; and a pot and a rosary garland should be held in the two upper right hands respectively.

160-161. She should be clad in pure red clothes, and adorned with all ornaments; thus is described Brahmāṇī.

161—163. Rudrāṇī should have a white complexion; her two upper right and left hands should be in the boon-giving and refuge-offering postures (respectively); the deer should be in the other left hand and the net in the other right hand.

164. She should be clad in leather (skin) clothes, and adorned with all ornaments.

165-166. The conch leaf (*śaṅkha-patra*) should be put on the left ear and earring on the right: thus are described the features of Rudrāṇī.

166-167. Chāmuṇḍī should put on a conch leaf (*śaṅkha-patra*) on the left ear and a conch earring on the right.

168. All other goddesses should be adorned with crocodile-shape earring on the ears.

169. She (they) should be adorned with a chain over the neck and also with the *keyura* and *kaṭaka* armlets.

170. She (they) should put on bracelets and bangles, etc., on the wrists, and all the fingers should be adorned with jewel rings.

171. She (they) should be adorned with garlands on the arms, and put on a bodice.

172. All the aforesaid goddesses should be adorned with all ornaments.

173-174. On the upper surface of the *bhadra* pedestal should be placed the severed head of a buffalo and upon that should stand quite erect the goddess Tārakā.

175. She should have four arms, two eyes, and be adorned with limbs of a dark blue complexion.

176. She should put on the *kirīṭa* type of crown, and be adorned with all ornaments.

177–180. Her upper right hand should be in the refuge-offering posture and the other hand should hold the disc; the upper left hand lying by the thigh should be in the boon-giving posture, and the other left hand should hold a conch; she should be clad in yellow clothes: thus is described Kātyāyanī, the rest being made as said before.

180-184. The (plumb) lines should be drawn by the middle of the crown, the forehead, and the tip of the nose, the centre (lit., moon-like part) of the navel, and the middle of the ankle along the two legs from top to bottom of an image (of those goddesses) in the comfortable sitting posture.[1]

185-188. The similar lines should be drawn in the bent or the erect posture on the body at long the middle of the two thighs, the two knees, and the two legs.

189-192. In the two-flexioned posture, the similar (straight) lines should be drawn by the middle of the crown and the forehead, through the nostrils (holes of the nose), by the middle of the right eye, and by the left leg placed on the left side of the navel.

Thus in the *Mānasāra*, the science of architecture, the fifty-fourth chapter, entitled:

The description of the female deities.

[1] See chapter XLVII, where a more detailed account is given of the plumb ines.

CHAPTER LV

THE JAIN IMAGES

1-2. The compilation of Mānasāra with regard to the description and measurement of the Buddhist and the Jain images, will be briefly stated now.

3-4. *Māna*, *pramāṇa*, *parimāṇa* *lambamāna*, *unmāna*, and *upamāna* : these are said to be the six (*padma*) kinds of measurement

5. The *māna* is said to be the measurement (of length) from the head (lit., limit) to the big toe (feet).

6. The *pramāṇa* is said to be the measurement of breadth ; and the *parimāna* is the measurement of girth (circumference).

7. The *lambamāna* is the (perpendicular) measurement by the plumb-lines, and the *unmāna* is the measurement of height (depth, thickness, lit., measurement downwards).

8. And the *upamāna* is the measurement of interspace : these are the measurements of an idol consisting of the height, etc.

9. These are the six kinds ot measurement with which the limbs (of an image) should be measured.

10. The rules and description of the absolute (*ādimāna*, lit., first) measurement are stated here in detail.

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[1] *Padma* is a name given by the *Tāntrikas* to the six divisions of the upper part of the body called *Chakras*.

11–16. The measurement of length in comparison with the length of the building, the measurement of height in comparison with the adytum (cella, sanctum), the measurement of height in comparison with the measurement of the door and the base, the measurement in cubit, the measurement of height in the *tāla* system[1], the measurement of height in *aṅgulas*, the measurement of height in comparison with the (height of the) worshipper, and the measurement in comparison with the main (principal) idol: these are the principal units of measurement in comparison with nine (principal) objects; each of these consists of three types, namely, the largest, etc. (i.e., including the intermediate and the smallest); this is the compilation (of Mānasāra).

17. The four measurements, beginning from the measurement in comparison with the main edifice, should be used for those who want enjoyment, salvation (beatitude), and wealth.

18. The measurements in cubit and according to the *tāla* system are conducive to enjoyment and salvation.

19. The measurement in *aṅgula* is used for those who want salvation.

20. The measurement in comparison with the master and the (principal) idol is known to be for all success.

21. The workers (sculptors) consider (follow) these measurements as the original (systems) on account of their being based on the measure of the body.

22. Each one of those measurements consists of nine kinds which will be stated below.

[1] According to the *Brahmāṇḍa-purāṇa* (Part 1, second *anushaṅga pāda*, chapter 7, verse 97) and the *Suprabhedāgama* (XXX-22) *tāla* implies the distance between the tips of the fully stretched thumb and the middle finger; but here in the *Mānasāra* as well as in the *Matsya-purāṇa* (chapter 258, verse 19) it implies the sense of the length of the face (up to the top of the head) and has been used as the unit for sculptural measure particularly along the plumb lines. It admits of ten or twelve varieties as the total length (height) of the body becomes from one to twelve times the length of the face.

23-24. The length of the edifice (temple) being divided into nine parts, each of these may be the height of the idol, stationary or movable ; the nine kinds consist of three in each of the three sizes, namely, the smallest, etc.

25. In the largest type, the height of the idol should be equal to the adytum (*garbha-geha*) ; in the smallest type, it should be one part out of the nine parts (into which the central hall is divided.

26. With regard to the height and the width of the door, the nine kinds of measurement (for the idol) should be as before.

27. (With regard to the base) the nine kinds of height consist of (three in each of) the smallest, (the intermediate, and the largest sizes); it is largest when it is equal to the base.

28. (With regard to the cubit measurement) the nine kinds should begin from one cubit and end at nine cubits, (the increment being by one), and consist of three in each of the three sizes, namely, the smallest, etc.

29. (With regard to the *tāla* measurement), the nine kinds should begin from one *tāla* and end at nine *tāla*.

30-33. With regard to the height of the worshipper, the nine kinds (of height for the idol) should consist of (three in each of) the smallest, (the intermediate), and the largest types, and the nine kinds of height of the idol, stationary, or movable, ending at the smallest, (the intermediate, and the largest) sizes, should extend to the full length of the worshipper, to the end of the hair (on the forehead), the tip of the nose, the end of the chin, the end (lit., limit) of the arm, the breast, the heart, the navel, and the sex organ.

34-36. The measurement in comparison with the principal idol is called the *utsava* height ; (of the three kinds of the *utsava* height), the largest one should be equal to the height of the principal idol, the intermediate one should be three-fourths of it, and the smallest one should be a half of it : these are said to be the three kinds of the *utsava* height.

37-39. As an alternative the same height being divided into sixteen parts, the nine kinds of the *utsava* height, consisting of the

smallest, (the intermediate), and the largest sizes should (begin from sixteen parts and) end at twenty-five parts, the increment being by one.

40-43. As another alternative the nine kinds of the *utsava* height, consisting of the largest, (the intermediate), and the smallest sizes, should extend to the end of the hair (on the forehead) of the principal idol, the end of the eye-brow, the eye, the tip of the nose, the chin, the arm, the breast, the heart, and the navel.

44. The measurement with the half (unit) of the *utsava* height is called the *kautuka* height.

45-46. The nine kinds of the *kautuka* height consisting of the smallest, (the intermediate), and the largest sizes should begin from one part out of eight (nine) into which that (? *utsava*) height is divided, and end at nine, the increment being by one.

47. The (six formulas[1] consisting of the) *āya*, etc., up to *aṁśā* should be considered regarding these nine (comparative) measurements, namely, the measurement of the temple, etc.

48-50. Any one selected out of the assemblage (of nine units) being divided into one hundred parts should be increased by one to one hundred and thirty parts, and the auspicious *āya*, etc., should be considered with regard to both the stationary and the movable idols.

51. Over and above that the learned (artist) should regularly take into consideration the *jāti* and other kinds of measurement[2].

52-53. The finger of the principal idol, the *māna* finger, and the *mātra* finger : these are the three kinds of *aṅgula* (finger) measures.

54-55. The height of the principal idol being divided into ninety-six parts, each of these parts is considered as an *aṅgula* (finger) of the principal idol; with this *aṅgula* unit the *utsava* height should be measured.

56. Eight times the width of a *yava* (barley corn) make one *aṅgula* ; this is known as the *māna* (standard) *aṅgula* (of three-fourths inch).

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[1] See note 1, page 542, and the writer's *Dictionary*, page 600.

[2] Namely, *Chhanda*, *Vikalpa*, and *Ābhāsa* : the distinction depends upon the different measures of the cubit, see chapter XIX, lines 3—5, page 222.

57-58. The *mātra aṅgula* is said to be the (measurement of the) length (and) width of the middle joint of the middle finger of the right hand of the master.

59-60. This *aṅgula* is of nine kinds consisting of three in each of the three sizes, the intermediate being less than the largest of eight parts by one, and the smallest being three-fourths of the largest (i.e., of six parts).

61. The stationary and the movable idols should be measured in the *māna* (standard) *aṅgula*.

62. The idol for personal worship should be measured in the *mātra aṅgula*.

63-64. The measurement in the *deha* (body) *aṅgula* (i.e., finger of the idol or the master) should begin from eleven *aṅgulas*, and end at one hundred and thirty-three *aṅgulas*, the increment being by two *aṅgulas*.

65-66. The measurement in the *māna aṅgula* should begin from nine *aṅgulas*, and end at one hundred and twenty-three *aṅgulas*, the increment being by two *aṅgulas*.

67-68. The measurement in the *mātra aṅgula* should begin from seven *aṅgulas* and end at one hundred and thirteen *aṅgulas*, the increment being by two *aṅgulas*.

69. The *jāti* and the other distinctions with regard to (all) the *aṅgulas* should be left out.

70. The best artist should, however, apply the tests of the six formulas, namely, the *āya*, etc., with regard to the *aṅgula* (measure).

71. The characteristic features of the stationary and the movable idols (of the *Jains*) will be described here (below).

72. It should have two arms and two eyes, and the head should be clean shaven (?), and there should be the top knot (? nimbus).

73. It should be in a straight, erect, or siting posture.

74. The legs should be uniformly straight, and the two long (?suspending) hands should be in the same posture.

75-76. It (the idol) should be in the sitting posture, the two feet being placed on the lotus seat in a straight pose, and it (the whole image) being in a stiff attitude and bearing a meditative look on the supreme soul.

77. The right and the left hands should be placed upwards over the face.

78. It should be placed upon a throne in an erect or sitting posture.

79. At its (throne's) top should be a pinnacle (*niryūha*) and a crocodile arch.

80. Above that should be made the ornamental (*kalpa*) tree, together with the royal elephant and such other objects.

81. It (the idol) should be accompanied by Nārada and other sages as well as the assembly of gods and goddesses in a praying attitude.

82. The *Yakshas*, the *Vidyādharas* and other demi-gods and the kings excepting the *Chakravartin* should be also carved (in a praying mood).

83. It should also be made being worshipped by *Nāgendra* (serpent-king) and others, and the lords of the quarters, together with the *Yakshas*.

84. The *Yaksha* and the *Yaksheśvara* are placed on the side serving with raised chowries.

85. The Jain deities should be placed below the fourth or third heaven (*antariksha*, lit., sky).

86-88. Crystal (transparent ?), white, red, yellow, and bright greenish: these should be the complexions of the five groups of deities, namely, the *Siddhas*, the *Sugandhas*, the *Jinas*, the *Arhatas*, and the *Pārśvakas* respectively.

89. The limbs of the (Jain) deities should be measured in the largest type of the ten *tāla* system[1].

90. The twenty-four (Jain) *Tirthaṅkaras* (saints) should also be measured in the (same) ten *tāla* system.

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[1] See note 1, page 518, and Chap. LXV, and the writer's *Dictionary*, pages 228—240.

91. There should be no ornaments, and no clothes on any part of the body (of the Jain images) which is (naturally) beautiful.

92. The *śrīvatsa*[1] mark should be made in gold all over the chest

93. The images of *Chaṇḍa* and *Mahā-Chaṇḍa* should be made on the left and the right of the door (of a Jain temple).

94. Thus are described the Jina (images), the rest being made as said in the scripture (*āgama*).

Thus in the *Mānsāra*, the science of architecture, the fifty-fifth chapter, entitled :

The description of the Jain images.

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[1] A mark or curl of hair on the chest (generally of Vishṇu).

CHAPTER LVI

THE BUDDHIST IMAGES

1. The characteristic features of the Buddhist images will now be described fully according to rules.

2. The Buddhist images should be made particularly movable like the Jain images.

3. They should be in the erect or the sitting posture, and be placed on the thrones (with decorations including the arch and ornamental trees).

4. They should be furnished with the holy fig tree, and the *Kalpa* (all productive) trees should be also constructed.

5. They should be given a pure white complexion and have a broad (full) face.

6. The ears should be long, the eyes large, the nose high, and the face smiling.

7. The arms should be long, and the chest broad and beautiful.

8. The limbs should be fleshy and fully developed, and the belly protruding and round.

9. The legs should be uniformly in the erect posture, the hands long, and the sitting posture (looking) comfortable.

10. They should have two arms and two eyes, and the crowned head sparkling with the (nimbus) *ushṇīsha*.

11. Thus should be made the (idols in the) erect posture, and those in the sitting and other postures should be made as said before.

12. In both the erect and the sitting postures, they should be clad in yellow clothes.

13. The upper half of the yellow left arm should be in a praying pose.

14-16. It (the image) should be either stationary or movable, and be made of wood, stone, and metallic substances[1]; it may be carved in high relief (*chitra*), middle relief (*ardha-chitra*), or be painted (or in low relief, *chitrābhāsa*) on a tablet or wall and be made of terracotta and grit.

17. Their limbs should be measured in the largest type of the ten *tāla* system.

18. The wise (sculptor) should make the rest as aforesaid, according to their (Buddhist) scripture (*ā*).

Thus in the *Mānasāra*, the science of architecture, the fifty-sixth chapter, entitled :

The Description of the Buddhist images.

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[1] Gold, silver and copper (see Chapter 2—4).

CHAPTER LVII

THE IMAGES OF THE SAGES

1. The characteristic features of the (images of the) sages will now be briefly described according to the (lit., in this) science of architecture.

2-3. Agastya, Kâśyapa, Bhṛigu, Vasishṭha, Bhārgava, Viśvā-mitra, and Bharadvāja: these are the seven sages in order (who will be described).

4. The limbs of Agastya should be measured in the seven *tāla* system[1].

5. Both Kāśyapa and Bhṛigu should be measured in the eight *tāla* system[2].

6. All other sages should be measured in the nine *tāla* system[3].

7. Agastya should have a bright green complexion, and Kāśyapa a yellow one.

8. Bhṛigu should be dark in complexion, and Vasishṭha red.

9. Bhārgava should be brownish (lit., of a tawny colour), and Viśvā- mitra reddish.

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[1] See lines 10—38, and the writer's *Dictionary*, pages 223-224.

[2] See lines 39—52, and the writer's *Dictionary*, pages 224—225.

[3] See lines 53—59, and the writer's *Dictionary*, pages 225—228.

10. And Bharadvāja should be greenish (lit., of turmeric colour): these are known to be the complexions (of the seven sages) in order.

11-12. All those sages should be furnished with two arms, two eyes, *jaṭā* and *jūṭa* kinds of matted hair, and yellow garments.

13-14. He should be crooked in shape, possess a large belly, brownish, full, and befitting (the whole body): thus is described Agastya; thus should also be the (other) great personages (i.e., sages).

15-18. All the sages should be adorned with the sacred thread and the upper garment (*uttarīya*); they should hold a staff in the right hand and a book in the left hand, or there may not be any staff in the right hand, both the hands being similarly disposed; they should be optionally made in the sitting or the erect posture in a worshipping pose.

19. Of the eighty-four parts of the height, the height of the crown should be three parts.

20. The height of the face should be ten parts[1] and the height of the neck three parts.

21. The part (from the neck) to the heart should be ten parts, and thence the part down to the navel ten *aṅgulas* (parts).

22. The part (from the navel down) to the sex organ should be five parts; thus should be made up the fifty-one part (*pīṭhāṁśa*)[2] height up to the buttocks (*śroṇi*).

[1] Either the crown should be two parts and the face ten parts or the crown three parts and the face nine parts, because in the seven *tāla* system the total height of 84 parts is to be seven times the total height of the crown and the face. But such an alteration does not make up the total. In the subsequent systems also the general rule is not strictly followed, owing to the fact that each system is further considered in connection with the usual large, intermediate, and small sizes. It appears that the total height is to be as many times the combined crown and face as is indicated by the number of the particular *tāla* system in the small size of measure only.

[2] *Pīṭha* is intended to be taken to imply *pīṭha-sthānasar* the fifty-one sacred places where the relics of Satī (the faithful), wife of Śiva, have been installed after her body was cut into fifty-one pieces by the discus of Vishṇu as a result of her quarrel with the gods owing to her husband being not invited at the great sacrifice performed by her father.

23-24. The height of the knee-cap should be three parts, and the height of the foot should be equal tc the knee-cap (i. e., three parts), and the height of the thigh and the leg should be equally divided (into fifteen parts each) ; this is known as the seven *tāla* (measurement).

25. The length of the arm should be twenty parts, and the elbow one and a half parts.

26. The fore-arm (lit., the part from the elbow to the wrist) should be sixteen parts, and the palm eight parts in length.

27. The length of the foot should be eleven parts, and the breadth of the face seven *mātras* (parts).

28. The width of the neck should be five parts, and equal to that the (width of the) root of the arm.

29. The breadth of the chest from one armpit to the other should be fourteen *mātras* (parts).

30. The breadth (i. e., width) down to (i. e., round) the heart is said to be twelve *aṅgulas* (parts).

31. The width round the middle belly should be made sixteen parts.

32. The width round the hips should be twelve parts, and the width of the thigh eight parts.

33. The width of the knee should be five parts, and the width of the leg four (three) parts.

34. The width round the lowest part of the ankle should be three parts, and the breadth of the sole four parts.

35. The width of the upper arm should be preferbly four parts.

36. The width of the fore-arm should be four parts and a half, and of the wrist-joint one (three) part.

37. The breadth of the palm should be three parts and a half, and the length of the palm four *aṅgulas* (parts).

38. And the length of the finger should be one *aṅgula* (part) : this is said to be (the seven *tāla* measure of) Agastya.

39. The (total) height in the eight *tāla* should be divided into ninety-six (equal) parts.

40. From the nimbus (*ushṇisha*) up to the hair should be one part, and (thence) the height of the crown three parts.

41. The height of the face there from down to the chin should be ten parts and a half.

42-43. Thence the neck should be three parts downwards; the distance from that (neck) down to the heart should be ten parts; and equal to that should be the distance from that (heart) down to the navel.

44. The middle belly below that (navel) down to the sex organ should be equal to that.

45-46. Below that should be twenty-one parts for the height of the thigh and three parts for the knee-cap; the leg should be equal to the thigh and the foot equal to the knee-cap.

47. The length of the foot should be fourteen *mātras* (parts), and the breadth of the face nine *aṅgulas* (parts).

48-49. The breadth (? width) of the neck should be six *aṅgulas* (parts); the breadth (of the shoulder) up to the arm four parts and a half, and (the width at) the root of the arm six parts.

50. The length of the arm should be twenty-one parts, and the elbow one and a half parts.

51. The (length of the) fore-arm should be two-and-a-half times the face, and the palm equal to the length of the face.

52. Thus is described the eight *tāla*, the rest being carried out as before.

53. With regard to the nine *tāla* the height should be divided into one hundred and eight parts.

54. The height of the crown, the neck, the knee, and the foot should be three parts each.

55. The height of the face, the chest, the belly, and the buttocks should be twelve parts each.

56. The length of the thigh, the leg, and the arm should be twenty-four parts each.

57. The fore-arm should be eighteen parts from that (arm, i.e., elbow) down to the middle finger.

58. The distance from the waist-joint to the tip of the thumb should be made equal to the length of the face.

59. The length of the foot should be made fifteen *aṅgulas* (parts) as said before.

60. The characteristic features of the (images of the) sages are thus described ; the rest should be made in accordance with one's discretion.

Thus in the *Mānasāra* the science of architectre, the fifty-seventh chapter, entitled :

The description of images of the sages.

CHAPTER LVIII

THE IMAGES OF THE MYTHICAL BEINGS

1. The characteristic features of the *Yakshas*, the *Vidyādharas*, and similar other beings will be described now.

2. They should have two arms and two eyes, and should be furnished with the *karaṇḍa* type of crown.

3. Their legs should be clad in clothes, and they should resemble the shape of the demons

4. The complexion of the *Yakshas* should be bright blue (*śyāma*) and yellow (*pīta*).

5. The complexion of the *Vidyādharas* should be dark red (*śyāma-rakta*) and yellow.

6. The *Yakshas*, the *Vidyādharas*, and such other beings should be measured in the nine *tāla* system.

7. The *Yakshas* are the followers of the gods, and the *Vidyādharas* are their bearers.

8. The *Gandharvas* are efficient in singing, etc., and form the musician (band) party of the divine troop (*gulma*).

9. There are also those, called the *Rākshasas* and the *Nigrahas*, who are sub-classes of the *Yakshas*.

10. The *Yakshas* are the bearers of the chowries and other emblems (liveries) of the gods.

11. The *Yakshas*, the *Vidyādharas* and others should be made in the erect or the sitting posture.

12. Their right leg should be in the *svastika* (cross-like) pose, and the left leg bent.

13. One hand should hold up the chowries, etc., and the other should keep touching the ground.

14. These are the features of the *Yakshas*. The *Vidyādharas* should be made in the sitting posture.

15. Their two legs should resemble the plough shape, and be kept extended turned from the front towards the back.

16. Their two hands should be kept touching the knee and raised towards the gateway.

17. Thus are described the *Vidyādharas*; they should be adorned with all ornaments.

18-19. The *Gandharvas* are stated to be characterised by their erect posture, by their singing in a dancing pose with a lute or a churning stick, and by other musical instruments including the lute.

20-24. The legs should be like those of animals, the upper body like that of man, the face like that of the *Garuḍa* bird, the arms furnished with wings, the crown decoratad with a lotus, the complexion like the shaded flower, and the sweet lutes should be kept around them : such are the characteristic features of the *Kinnaras*.

Thus in the *Mānasāra*, the science of architecture, the fifty-eight chapter, entitled :

The description of *Yākshas*, *Vidyādharas*, and other mythical beings.

CHAPTER LIX

THE IMAGES OF THE DEVOTEES

1. The characteristic features of all the devotees will now be described in order.

2. They are divided into four classes, and should be accordingly measured.

3-4. The first class (of devotees) are called the *Sālokya* (who reside in the same place as God), the second the *Sāmīpya* (who reside in the neighbourhood of God), the third the *Sārūpya* (who are in close resemblance or identity with God), and the fourth the *Sāyujya* (who are in intimate union with God).

5. The *sālokya* state is said to be attained by a combination of devotion (attachment), knowledge, and renunciation (i.e., absence of worldly desire).

6. The *sāmīpya* state is said to be attained through the combination of knowledge and renunciation.

7. The *sārūpya* state can be attained only through the meditation (on God).

8. And the *sāyujya* state which is the chief object of life is based on the true knowledge (about God).

9. The limbs of the *Sālokya* class of devotees should be measured in the largest type of the nine *tāla* system.

10. The limbs of the *Sāmīpya* class of devotees should be measured in the smallest type of the ten *tāla* system.

11. The wise (sculptor) should measure the *Sārūpya* class of devotees in the intermediate type of the ten *tāla* system.

12. The *Sāyujya* class of devotees are said by the wise to be measured in the largest type of the ten *tāla* system.

13. The *tāla* measurement of the devotees will be described in this order.

14. The whole length from the crown to the foot should be divided into one hundred and twelve (*bhāva*) parts[1].

15. The crown (head proper) should be four *mātras* (parts) and the distance down to the eye four *aṅgulas* (parts).

16. The distance down to the nose (*puṭa*, nostril) should be four *mātras* (parts) and equal to that the distance therefrom down to the chin.

17-19. The height of the neck should be four *mātras* (parts). The distances from the neck (*bhadra*) to the heart, from the heart to the navel, and from the navel to the sex organ should be twelve parts each. The length of the thigh should be twice the face (i.e. twenty-four parts).

20. The knee-cap should be made equal to the neck (i.e., four parts), and the leg equal to the thigh (i.e., twenty-four parts).

21. The foot should be equal to the knee-cap (i.e., four parts) in height (length): thus should be measured the height (in the large type of the nine *tāla* system).

[1]Two kinds of *bhāvas* are generally enumerated, namely, *sthāyin* and *vyabhichārin*, the former numbers 8 or 9 corresponding to 8 or 9 *rasas*, and the latter numbers 33 or 34; but here the figure required is 12 as is assured by the details given in the following lines. This is stated (in line 9) to be the largest type of the nine *tāla* system, the other two types being of 110, 108 parts. According to the general rule the smallest type will be the nine *tāla* proper, being nine times the face of 12 parts.

22. The sole from the largest toe to the heel should be of sixteen *mātras* (parts).

23. The length of the arm should be preferably twenty-four *mātras* (parts).

24. The elbow should be two *mātras* (parts) and the forearm eighteen *aṅgulas* (parts).

25. Thence the palm up to the tip of the middle finger should be twelve *mātras* (parts).

26. The breadth of the face should be eleven parts (*aṁśa*), and the width of the neck eight parts.

27. Equal to that (i.e., eight parts) should be the width round the root of the arm, and the width of the knee-cap equal to that.

28. The breadth (width) up to (i.e., round) the arm should be thirty-six *aṅgulas* (parts).

29. The breadth (of the chest) from one armpit to the other should be preferably twenty parts.

30. The breadth at the middle belly should be fifteen parts.

31. The width round the buttocks should be seventeen parts.

32. The width round the loins should be nineteen parts.

33. The width at the root of the thigh should be twelve and a half parts.

34. The width at the root of the leg should be seven and a half parts.

35. The middle of the leg should be six parts, and the width four parts.

36. The width of the ankle at the root of the knee tube should be one and three-fourths times the foot.

37. The breadth of the heel is stated to be four and a half parts.

38. The breadth of the toes (lit., extended foot, *prapada*) should be five-sixths part.

39. The breadth of the palm should be five *aṅgulas* (parts), and the length of the thumb four parts.

40. The width thereof (of the thumb) should be two parts, and a half of that width should be the breadth of the nail.

41. The length of the forefinger should be equal to the thumb in length, and the width thereof should be one part.

42-43. Three parts, two parts and a half, and two parts should be the preferable length of the middle finger, the ring finger, and the little finger respectively.

44. Their respective width is said to be seven, six, and five *yavas* (i.e., seven-eighths, six-eighths and five-eighths parts).

45. The breadth of the nails is said to be a half of the breadth of the respective fingers.

46. The width of the arm at the middle should be seven parts, and the elbow should be the same.

47. The (width of the) forearm should be four parts and of the wrist-joint three parts.

48. The breadth of the palm should be six parts at the root, and four parts at the top.

49. The length of the palm should be six parts, and the remainder the middle finger.

50. Five and a half parts should be the length of the two fingers, the forefinger and the ring-finger.

51. The length of the little finger and the thumb should be three and a half parts.

52-53. One part (i.e., eight *yavas*), six, seven, six, and four *yavas*: these are said to be the width of the five fingers from the thumb to the little finger respectively.

54. They (the fingers) should be measured as aforesaid, tapering from the broad root to the thin tip.

55-57. The breadth of the nails at the tip should be preferably three parts each; the length of the nails is said to be three-fourths part more (than the breadth), or the wise sculptor should make the tip of the nail one, two, or three *yavas*,

58. The thumb should have two parts (digits) and the other fingers three (digits).

59. The lines of knowledge, etc., should be marked on the surface of the palm.

60. The brows should be situated extending from the eye-line to the end of the hair.

61. The length of the eye should be two parts, and a half of that its breadth.

62–63. The length of the ear should be four parts, and the tubular vessel of the ear equal to that, and the breadth (? of the ear) is said to be two parts; the rest should be made as prescribed by the wise sculptor.

64. Thus is described the largest type of the nine *tāla*, the rest (of which) should be like those of the ten *tāla*.

65–66. For the second type (i.e., the *Sāmīpya* class of devotees)[1] the whole height should be divided into one hundred and sixteen parts from the foot to the top of the limit of the crown (as) in the smallest type of the ten *tāla* system.

67. The height from the crown to the hair should be four parts.

68. Thence the distance down to the eye-line should be four parts and a half.

69. Therefrom the distance down to the end of the nose should be preferably four parts.

70. The distance from the tip of the nose to the chin should be three parts and a half.

71. Thence the distance to the neck should be one and a-half parts, and the height of the neck four parts.

72–73. The distances from the neck to the heart, from the heart to the navel, and from the navel to the sex organ should be all equal, being twelve parts each.

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[1] Compare line 10.

74. The length of the thigh from the sex organ (to the knee-joint) should be twenty-five parts.

75. The leg should be equal to the thigh, and the (height of) the foot from the sole and the knee-cap four parts each.

76. The (length of the) foot from the heel to the largest toe should be sixteen parts and a half.

77. The length of the arm from the line of the larynx should be twenty-five parts.

78. The elbow should be two parts, and the forearm nineteen parts.

79. The palm up to the tip of the middle finger should be twelve parts and a half.

80. The breadth of the face is said to be eleven parts and a half.

81. The width of the neck should be eight parts and a half, and that of the arm and the knee equal to that.

82. The breadth (of the shoulder) up to the arm should be thirty-seven and a half parts.

83. The distance between the armpits is stated to be twenty and a half parts.

84. The width at the middle belly should be fifteen and a half parts.

85. The width round the buttocks should be eighteen and a half parts.

86. The width round the hips is desired to be nineteen parts.

87. The width at the root of the thigh should be twelve and a half parts.

88. The width at the middle of the leg should be eight and a half parts.

89. The width of the knee should be four parts, and the width of the ankle five parts.

90. The toes (*prapada*, lit., the extended point of the foot) should be six parts, and the length of the thumb four parts.

91–92. The length of the forefinger should be equal to that, and the length of the other fingers should be less than that by half a part, but the breadth (thereof) is said to be equal.

93. The width of the elbow should be eight and a half parts.

94. The width of the forearm should be five parts, and that of the wrist-joint four parts.

95. The breadth of the palm should be five parts, and the length of the palm seven parts.

96. The preferable length of the middle finger should be five and a half parts.

97. The length of the forefinger should be made of five parts.

98. The length of the smallest finger and the thumb should be four and a half parts each.

99. The length of the ear should be four parts, and the extension of the tubular vessel equal to that.

100. All other limbs, which are not mentioned here, should be measured as in the largest type of the ten *tāla* system.[1]

101. When that is made under the supervision of the sculptors, there would be no defect in it.[2]

Thus in the *Mānasāra*, the science of architecture, the fifty-ninth chapter, entitled:

The description of the devotees.

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[1] See chapter LXV, and the writer's *Dictionary*, pages 233—240.

[2] In this account no description of the images proper is given.

CHAPTER LX

THE GOOSE

1-3. Now I shall describe the characteristic features of the riding animals (vehicles) of the Triad, namely, the characteristic features of the goose, the *Garuḍa*-bird, the bull, and the lion (will be described in order).

4-5. The three kinds of height of the goose, consisting of the largest and other (the intermediate and the smallest) sizes, are said to be equal to the height of Brahmā (the rider), one-half, and one-third thereof.

6. The (limbs of the) goose should be measured lengthwise in the largest type of the two *tāla* system.

7. The height of the head should be four parts, and the length of the neck eight parts.

8-9. (Thence) the height up to the heart (i.e., the middle portion) should be eleven parts, below that the length of the thigh one and three-fourths parts, and the knee is said to be one part.

10. The length of the leg should be equal to the height of the thigh, and the height (i.e., length) of the foot one part.

11. The length of the face should be three parts, and at the back of the head two parts.

12. The breadth (width) of the face should be four parts, and (that of) the neck at the root one part.

13. The width of the neck should taper from the root towards the top where the face should be bisected into two beaks.

14. The breadth of the belly should be eight parts, and the chest area equal to that.

15. From the fore part thereof and proceeding from the root (of the tail) the length of the tail should be sixteen parts.

16-18. The breadth of the eye should be five *aṅgulas* (parts), and the length of the wing eight parts, its breadth two parts, and the fore-part should be one *aṅgula* (part) and the thickness one *aṅgula* (part); and the length of the arm should be eight parts.

19. The elbow should be one part, and the length of the hand (wing) up to the end six *aṅgulas* (parts).

20. The two hands (wings) should be shaped like the plough at the joint (lit., entrance) of the end of the wing.

21-22. The width of the quite circular root of the thigh should be two and a half parts; the breadth at the fore part should be one part and a half, and the breadth of the knee one fourth part.

23. The length of the leg should be one part, and the breadth of the sole two parts.

24. The length of the (middle finger) up to the tip should be four parts.

25. To each side of that (middle finger) should be two fingers preferably of two parts each.

26-27. The length of the root (main) finger at the back should be preferably two parts; the breadth at the front should be one part and at the back equal to that.

28. The width of the (main) finger should be one and a half arts, and a half of that should be the (width of the) other fingers.

29. The length of the face should be three parts, and the breadth one part.

30. The length of the eye should be half a part, and the breadth should be discreetly made [1]

31. The expert (sculptor) should mark the eye at the middle of the length of the face.

32. The distance between the eyes along the ear-line should be two *yavas* (i.e., one-fourth part).

33. The height of the crest (*stūpi*) above the head should be two parts, and the thickness (thereof) one part.

34-35. Its length ending at the back of the head should be six parts, and the breadth four parts; the rest should be discreetly made.

36-37. The riding bird (goose) of Brahmā should be made white all over the limbs, but the legs should be mixed with red, and the beak should be goldish.

38. For all the images the vehicles should be made movable (? as well as stationary).

39-42. The feathers of variegated (lit., all) colours should be charmingly fixed at the two wings of the goose, at its tail, back, and rows of feathers at the crest; and feathers should be made coating the elongated belly.

43-46. Rows of geese should be discreetly carved as ornaments at the different parts of the buildings of the gods, the Brahmans, and the Kings, (namely) at the entablature, the top of the crowning fillet, the pinnacle, the nest (recess), the neck, and all over.

Thus in the *Mānasāra*, the science of architecture, the sixtieth chapter entitled:

The description of the goose in connection with the vehicles.

[1] Compare line 16 where the breadth is stated to be five parts.

CHAPTER LXI

THE GARUḌA-BIRD

1. The measurement and the characteristic features of the king of birds (*Garuḍa*) will be described now.

2-5. Equal to the height of the principal idol (of Vishṇu), three-fourths, and one-half of it; equal to the *utsava*[1] height (i. e., the comparative height of the idol), twice, thrice, three-and-a-half times, four times, four and a half times thereof: these are said to be the nine kinds of height (of *Garuḍa*) consisting of three in each of the three sizes, namely, the largest, etc.

6-7. Each one of these measures, being divided into thirty parts, should be increased by one to one hundred and twenty-five parts, for the verification by the six auspicious formulas, namely, the *āya*, etc.[2]

8-10. As an alternative the height of *Garuḍa* may be measured in *aṅgula* (unit of three-fourths inch): it should begin from one *aṅgula* and end at one hundred and twenty-three *aṅgulas*, the increment being by two *aṅgulas*; this measurement (also) should be verified by the formulas of *āya*, etc.

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[1] Images are given special height when made for a festivity; the usual meaning of *utsava* is the height of an image in comparison with the idol (see chapter LV. 34, and the writer's *Dictionary*, pages 80-81).

[2] Compare lines 25—42, and Note 1, page 542, and see the writer's *Dictionary*, pages 600 fol.

11. Like the height of *Garuḍa*, the king of birds, should be also measured its length.

12–15. The nine kinds (of length) consisting of the smallest size, etc., should be equal to the length of the pedestal (*pīṭha*), greater by one-half and three-fourths, twice, twice and one-fourth, twice and a half, twice and three-fourths, thrice, and thrice and one-fourth.

16–17. It (the height) should be equal to the length, three-fourths and one-half thereof; these are said to be the three sizes, namely, the largest, etc.: thus is known to be (measured) the height of *Garuḍa*.

18. This (? height) need not be verified by all the six formulas: only the formula of *aṁsa* should be applied (in this case)[1].

19–20. In the erect, the sitting, or the walking posture the height should be taken, according to rules, from the crown of the head to the foot.

21–23. In comparison with those measures, and according to some, in comparison with the principal idol, as also in the *aṅgula* unit in case of the *utsava* image as aforesaid: in all these ways the measures (of height) should be ascertained, and should be as stated above.

24. The best artist should make that (*Garuḍa* image) stationary or movable.

25. The rules of the six auspicious formulas, namely, the *āya*, etc., will be stated now.

26–28. The formulas of *āya*, etc., in case of all the riding animals should be properly considered: by multiplying and dividing, according to the rules, the height of the riding animals, namely, *Garuḍa* (of Vishṇu), *Haṁsa* (the goose, of Brahmā), *Vṛishabha* (the bull, of Siva) and *Siṁha* (the lion).[2]

[1] With regard to the measurement of the riding animals the six auspicious formulas consisting of *āya*, etc., must not be made to include the *Tithi*, but they should be made of the *Aṁśa* instead. See the writer's *Dictionary*, page 600.

[2] Of men, gods and goddesses (page 599, lines 15—45).

29. In order to find out the *āya*, it (the length) should be multiplied by eight and the product should be divided by twelve [1].

30. The *vyaya* is found out by multiplying it (the breadth) with nine and dividing the product by ten.

31. The *yoni* is found out by multiplying it (the breadth) with three and dividing the product by eight.

32. The *ṛiksha* is found out by multiplying it (the length) with eight and dividing the product with twenty-seven (lit., *gupta* and twenty).

33. The *vāra* is found out by multiplying it (the height) with nine and dividing the product with seven.

34. The *aṁśa* is found out by multiplying it (the height) with four and dividing the product by nine.

35. The remainders (in each of the above mentioned six formulas) indicate the *āya*, etc. ; thus the six formulas should be solved.

36. The greater *āya* and less *vyaya* (are auspicious), but the reverse with greater *vyaya* (is inauspicious).

37. The horse, the lion, the bull, and the elephant : these are known as the auspicious *yoni*.

38. With regard to the lion, if the elephant-*yoni* be available it is inauspicious ; if that (lion) be not available the elephant should be preferred.

39. The *vivat*, *pratyaraga*, and *hastā* : excluding these, all other *ṛiksha* are auspicious.

40. Saturday, Sunday, and Tuesday : excluding these, all other *vāra* (week days) are auspicious.

41. The *taskara*, *shaṇḍa*, and *preshya* : these *aṁśa* should be avoided (the rest are auspicious).

42. Thus should be considered the *āya*, etc. The measurement of the limbs (of *Garuḍa*) will be stated here.

[1] The remainder should be the *āya*.

43-46. In accordance with the nine *tāla* system the (total) height of *Garuḍa* should be distributed to the hair (i.e., crown), thence to face, thence to neck, thence to lower portion, thence to sex organ, thence to thigh, thence to knee, thence to legs, and thence to foot in order of four, twelve, four, twelve, twelve, twelve, twenty-four, twenty-four, six, twelve, and four respectively [1].

47. Then, out of fifteen parts of its lion-like foot ten parts should be the (measure of the) sole.

48. The length of the arm should be twice the face, the elbow should be equal to the eye, and the fore hands should lean over a stick.

49. Thus is described the (limbs of *Garuḍa* from the) sole to the other (members) by the ancient sages versed in the science (of sculpture).

50-53. In the large type of nine *tāla* system the breadth of the ear should be eight parts, and the breadth (of the chest) from one arm-pit to the other should be twenty parts, the breadth along the heart seventeen parts, the width of the belly twelve (? thirty-two) parts, and the breadth equal to (that of) the buttocks.

54-57. Below that, the width of the hip should be seven parts, and the thigh ten (parts), and the width of the circular testicle at the root eight parts ; the organ of generation should be made at the middle of the breadth of the root of the legs, and the breadth of the ankle should be four parts.

58-59. The breadth of the foot should be five parts and the length of the largest toe (? thumb) three parts ; and equal to that is said to be the length of the fore finger.

[1] The exact size of the nine *tāla* is not specified here, but in the largest type the whole height is divided into 112 parts (see the writer's *Dictionary*, pp. 225-226) and in the smallest size there should be 108 parts. Some unspecified limbs are also stated according to the ten *tāla* system see line 83). Again the whole figure being the composition of limbs of hybrid species of animals and birds, and the text being beyond improvement the measures given in the following lines are more or less confusing.

60-61. The other four fingers should be nine, (?) ten, eleven, and twelve parts; they should be made of human measure by the learned artists.

62-65. Seven, six, five, and four parts should be the measures at the joints of the arm; of the twelve parts width of the foreface the width at the middle and the front portions should be respectively three and nine; and the length thereof (i.e., of the foreface) and of the middle and the front portions should be respectively six, six, and four.

66-67. The length of the ring-finger and the forefinger should be five *yavas* and six *yavas* respectively, and that of the little finger and the thumb three *yavas* each.

68-69. The sculptor versed in the rules (of sculpture) should make the face of three parts: it should be smiling at the end (corner) of the eyes; the mind (sentiment, *mati*) should be expressive (on the face); otherwise it should be befitting to the king (of birds, i.e., *Garuḍa*).

70-71. The pair of eye-brows between the eye and hair at the end should be five parts, and that should extend to the nostril (*puṭa*).

72-75. The length of the *vihṛita* (the concealed organ) from the root of its *goji* (? origin) to the navel should be four *yavas*, and its height on the reverse should be one part; the forepart of the *vihṛita* should be one part more than the width of the forepart of the *goji*, and the lower portion should be four *parts* (lit, half of eight *mātras*); its height should be equal to the breadth, and the length four parts (*mātras*).

76-77. (Thus is distributed) the (whole) height which is divided into three portions, namely, the length between the lip (*adhara*), concealed organ (*vihṛita*), and the foot (*pāda*); the remainder of the length; the breadth, the height, and the rest should be discreetly made.

78-81. The nose up to the tip should be equal to the length of the face, the measure of which should fittingly extend to the drum of the ear; the chin (jaw) thereof should extend to the height of the ear; a half of that should be the breadth, and the tubular vessel the same.

82-83. Thus is described the measurement ; what is not stated here should be measured in accordance with the ten *tāla* system.[1]

84-85. The chain (ornament) should be (suspending) up to the elbow-joint, and the bodice should be put covering the two arms, the two wings, and the fingers.

86-87. Its nose should be made like the beak of a parrot, the fore-part of its foot like that of a goose, and the face with fangs.

88-89. The face should also be furnished with white complexion as of the nails ; and the bright green complexion should be at the fore part of the back.

90-91. It should be adorned with the eight-hooded snake (*nāga*), and with wings like those of a bird ; its look should be terrific, and its diadem of the *karaṇḍa* (lit., basket) type.

92-93. *Garuḍa* should have a melted gold complexion with circular spot resembling the colour of the sapphire.

94-95. The wings should have the mixture of five colours, and the ear artery (vein) should have the colour of the young shoot.

96-97. He is known to have the posture of bent mixedness in the walking pose and collectiveness in the sitting pose.

98-101. The crown of the head should be adorned with a milk white conch-shell (ornament) ; on the left ear should be a lotus of the lotus colour, and on the right ear should be a large lotus ; there should be a chain of ash colour and marked with cobras.

102-103. The cobras of black or blood-red colour should be suspended over the round (lit., ball like, *guḍaka*) shoulders along the (two) face-lines.

104-105. The root of the left forearm of *Tārkshya* (*Garuḍa*) should have a white complexion, and the wrist (lit., bracelet, *kaṭaka*), should be gold in colour.

[1] The hybrid features of *Garuḍa* and the combination of the nine and ten *tāla* systems of measures, above all the defective text have rendered the description partly obscure; but a clearer account of the whole figure is given in the following descriptive portion proper.

106. According to some the colouring of *Tārkshya* (*Garuḍa*) should be particularly as follows for the sake of beauty.

107. From the hair to the ear it should be bright green, and at the edge it should be blue.

108–109. From the sides to the heart and from these two to the elbows there should be five coloured wings which should be clotted with a bodice.

110–112. The parts from the heart to the hip-line and from the forearm to the tips of the two hands are said to be yellow; the part therefrom to the knee should be red, and thence the part to the foot should be whitish.

113. The fore parts of the two hands, the face, and the two legs should be a little bent down.

114. It (*Garuḍa*) should be in the erect or the sitting posture with the palms joined together, and in the pose of meditating on Vishṇu.

115. It should be adorned with all ornaments, and may be installed independently (of Vishṇu) in the village.

116. This should be worshipped by the wise man for prosperity and success.

117. The image of *Tārkshya* (*Garuḍa*) is (worshipped) specially for success in making charms (for mischievous purposes), etc.

118. (For this purpose) its feet should be made in the erect posture and the face partly (as) in the sitting posture.

119. The body all over should be gold in complexion, and the wings should be covered with the bodice as (stated before).

120. The (main) body should be in the recumbent posture (*nirvāṇa*, final emancipation), and the two nands should be kept downwards with the palms joined together.

121. The head should be like that of the lion and be furnished with five colours.

122. There should be no (coronation) crown on the head, but it (the crown of the head) should be like the crest of the cock.

123. The (pointed) end of the tail should be red, and its length should be (divided into) five parts.

124. The upper face should be thick, and there should be no covering over the (whole) face.

125. The limbs should interchange, as before, seven or eight colours all over (the body).

126-127. In the villages, at the end of the field, and at other places frequented by people, the learned (sculptor) well versed in the science (of sculpture) should build a temporary temple, and worship him.

128-129. If the *Trikāla* (*Garuḍa*) be worshipped every day, the enemy (of the worshipper) would be destroyed within three *nāḍis* [1] three days, three fortnights, or three months; there is no doubt about this.

130. If it be for capturing the enemy, the two arms (of *Garuḍa*) should be made at night.

131. During the war time for suppressing the allied enemy force the two hands (of *Garuḍa*) should be tied (together).

132-133. The image of *Garuḍa* (lit., son of Vinatā) should be made of stone, earth (terra-cotta), wood, and planked grit; and there should be a mixture of colour.

134-137. The fore wings should be of thirty parts and the hind wings one part less; similarly, the width at the root of the fore wings should be of five parts, and the width at the tip of all the wings should be as desired (i.e., discreetly made).

138-141. Thus should be connected the wings on the inside and the outside; the forefeathers should be attached to the two outside wings and to the tip (of the other wings); there should be five principal (feathers) for each of the wings of proper measure; and the smaller ones of unspecified measure may be made for the sake of beauty.

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[1] One nāḍi=1/60th of a sidereal day i.e. one *daṇḍa* or twenty-four minutes.

142-143. Yellow, white, dark blue, red and black: these should be the five colours (of the body) in order from the foot to the crown (i.e., bottom to the top).

144-145. The ears should be adorned with garlands as if attached to the shoulders; and there should be two lines (of garlands) along the buttocks and the wings.

146-148. If the height and breadth of the face be less, the death of the master would be inevitable, but if the measurement be made according to the rules there would be an increase of sons.

Thus in the *Mānasāra*, the science of architecture, the sixty-first chapter, entitled:

The measure and description of Garuḍa.

CHAPTER LXII

THE BULL

1. The characteristic features of the bull will be now described fully according to rules.

2–3. He is placed facing the sky on an altar (*pīṭha*) or on the pedestal (of the idol of Śiva, *utsava*) in the temple (itself) or in the pavilion in a walking pose (*chāra*).

4–5. The largest size of the height of the bull should be equal to the height of the door; when three-fourths of that, it is of the intermediate size, and when a-half, it is of the smallest size: these are the three kinds of height of the bull.

6–7. The nine kinds of height, consisting of three in each of the three sizes, the smallest, etc., should begin from one cubit and end at nine cubits, the increment being by one cubit.

8–9. For the verification by the formulas of the auspicious *āya*, etc., it should begin from twenty-five *aṅgulas* (instead of twenty-four *aṅgulas* or one cubit), and end at thirty-one *aṅgulas*, the increment being by two *aṅgulas*.

10–11. The height in comparison with the idol (i.e., the *utsava* height) of the bull is said to be the largest when it is equal to the

height of the main idol, the intermediate when it extends up to the ear of the idol, and the smallest when it reaches the arm of the idol.

12-13. One-third of the length of the altar, equal to its length, and three-fourths of it: these are the three kinds of height of the bull (in comparison with the pedestal).

14 The length from the foot to the crown of the head should be measured in the erect posture.

15-17. The best artist should carve him (the bull) in the erect or the sitting posture, solid or hollow, with the metallic substances[1], stone, wood, glass, jewel, stucco, earth (terra-cotta), and planked grit.

18-24. Such should be the height of the bull, and it should be divided into fifteen *aṅgulas* (parts); the distance from the crown to the top of the neck should be preferably ten *mātras* (parts); below that, eight parts are known to be the height of the neck; below that, (the distance) down to the root of the thigh, should be sixteen *aṅgulas* (parts); the length of the thigh should be six parts, and the height of the knee two parts; the leg should be equal to the thigh in length, and the height of the hoof should be two parts; and the length from the neck to the root of the tail should be forty parts.

25-26. The length of the horn should be four parts and its width three parts; one-eighth of that should be the width at the fore-part of the horn.

27-29. The breadth of the forehead should be nine parts, and the breadth of the face five parts; the height thereof should be equal to that, and the length of the eye two parts; and the height (of the eye) should be one-and-a-half parts, and the projection thereof should be half a part.

30. The length of the face between the eyes is known as eight parts.

31. Thence the distance to the end of the neck-joint (*kṛikaṭika*) is said to be six parts.

[1] These include gold, silver, and copper (compare chap. LI, 2-4).

[2] Compare *Suśruta*, 11. 345.

32. The middle portion between the horns should be four parts, and the height of the forehead the same.

33. The distance between the eye and the root should be four parts.

34-36. The length of the ear should be five parts, and the root of the ear two parts; equal to that should be the breadth, and the breadth at the middle four parts, the breadth at the top one part, and the width of the tubular vessel (drum) should be half a part.

37-38. The length of the nose is said to be one-and-a-half parts, the width of the hole (nostril) should be one part, and equal to that the forepart of the nose.

39-41. The length of the face should be five parts, the upper lip (jaw) three parts, the lower lip three parts, and the length of the tongue (also) three parts, the breadth of that (tongue) should be two parts, and a half of that its thickness.

42-44. The breadth of the neck should be five parts and the breadth of the root three parts; but the thickness at the root of the back of the neck should be eight parts, and at the top six parts; and the *vāsa* (? hump) should be made of six parts.

45-47. The height of the lap of the neck should be made of four parts by the wise (sculptor); its breadth at the root, the middle, and the front should be four, four, and one part respectively; and the thickness thereof should be made eight parts.

48. The radius at the bottom of the rounded portion (*bimba*) in front of the neck should be two parts.

49. Its height from the heart to the soft portion (*snigdha*) should be eighteen parts.

50. The height of the back should be fourteen parts, and the breadth of the back twelve parts.

51-52. The width at the root of the back and the thigh should be preferably ten parts, that at the middle should be eight parts and at the front four parts.

53. The length of the thigh should be five parts, and the height of the knee one part.

54. The length of the leg should be five parts, and the height of the hoof two parts.

55. The breadth of the knee is said to be three-and-a-half parts.

56. The length of the hoof should be two parts, and (that at) the root of the tail (also) two parts.

57. Between the two thighs should be connected the testicles with the belly.

58-59. The breadth of the shoulder should be six parts, and below that should be the thigh, the width of which at the root is said to be four parts, and at the top three and-a-half parts.

60. The breadth of the knee should be three parts, and the same should be the width of the leg.

61. Half a part should be the distance between two toes, and the hoof thereof should be equal to that (i.e., half a part).

62-63. The rest should be discreetly made; he (the bull) should be adorned with a white complexion: the elevated portion (*bhadra*, ? hump over the neck) should be whitish, and the front portion smoky black.

64-65. The four legs, the four hoofs, and the two ears should be whitish-red, and the whole (body) beautiful.

66-67. He should be adorned with garlands made of conch shell of light red colour, and also with ear bands and the rosary garlands round the ears.

68-73. He should be also decorated with other things such as garlands of *kiṁśuka* flowers, and with the tiger's skin over the back-bone; he should be furnished with the bee-shape two fillets on the fore-head, and also with various leaves, creepers, and jewels; and he should be adorned with chowries on the sides of the ears and the body, and with anklets on the feet.

Thus in the *Mānasāra*, the science of architecture, the sixty-second chapter, entitled:

The description of the bull.

CHAPTER LXIII

THE LION

1. The characteristic features of the lion, the riding animal of (the other) gods will be described now.

2-4. The height from the crown of the head to the hoof should be divided into twenty-five *aṅgulas* (parts): (of these) the height of the crown should be two parts, and the length (i.e., height) of the face seven parts; the (height of the) upper lip should be ten parts, and the distance therefrom to the feet six parts.

5. The length from the end of the upper lip (*uttara*, ? mane) to the root of the tail should be fifteen parts.

6. The length of the hind leg should be discreetly made of five parts.

7. The breadth of the face up to the ends of the cheeks should be preferably nine parts.

8-9. The width at the root of the two ears is stated to be equal to the breadth of the face; equal to that should be the breadth of the forehead, and the breadth of the face should be five parts.

10. The height of the forehead should be one part and equal to that the height of the brow.

11-12. The breadth and the height of the eye should be one part each; the root of the nose (snout) should be one part, and the breadth (of the nose) equal to that, and the nostril should be one-and-a-half parts.

13-14. Two parts, it is stated, should be left out below the eye-line, then the length (of the face) should be made of five parts and the height thereat should be half a part.

15-16. The lower lip should be of half a part, and above that one part apart should be made the upper lip below the eye-line.

17-18. The cheek should be of two parts and the length of the ear one part; the breadth of the ear should be half a part and the root of the ear equal to that (i. e., half a part).

19-20. The length of the tooth (fang) should be one part, and a half of that the breadth at the root; the teeth should be shaped like the quarter moon (crescent), and there should be six teeth in number.

21. Similarly (i.e., in conformity with the teeth) is stated to be the upper (jaw) (where) should be the blood passage (? vessel, lit., window).

22-23. The length of the tongue should be three parts and its width one part, and the thickness is said to be a half of the width; and equal to that should be the depth of the nose.

24. The breadth (i. e., distance) between the two eyes is said to be one part.

25-26. The root of the nose, the forepart of the *yuga* (lit., yoke, pair), the root of the ear, and the cheeks should be adorned with leaves and creepers, etc. Thus is described the lion's face.

27. The wise intelligent (sculptor) should make bees at the region of the face.

28. A half part of the two breasts should be coated with long hair.

29. The breadth of the chest is said to be nine parts.

30-31. The breadth of the foot should be three parts; the length of the sole should be five parts, and its breadth three parts, and the length of the toes should be a half of the length of the foot.

32. The four legs should be shaped like those of the tiger.

33. The breadth of the back should be ten parts, and the height of the back six parts.

34. The width of the thigh should be five parts and its length ten parts.

35. The breadth of the belly should be five parts, and equal to that its depth.

36-37. The length of the tail should be equal to the height of the lion, and the breadth one part; the root and the tip of the tail should be half a part, and it should taper gradually from the root towards the tip.

38-39. The forepart of the tail should be furnished with hair; the length of the testicle should be three parts, and its breadth at the root should be one part and at the tip three parts.

40. The length of the sex organ should be three parts, and its width half a part.

41-42. The lion should have a whitish complexion but his mane should be red; the interior of the mouth as also up to the end of the ear it (the face) should have a thick redness.

43. The nails resembling the teeth should be shaped like the infant moon.

44-45. Thus is described the representation of the lion; it should be employed as the vehicle of men, gods, and goddesses.

46-47. The measurement (of the lion) should be as aforesaid; and he should be carved in the erect, the sitting, or the recumbent posture.

Thus in the *Mānasāra*, the science of architecture, the sixty-third chapter, entitled :

The description of the lion.

CHAPTER LXIV

THE COMPARATIVE MEASURES OF IMAGES

1-2. The measurement from the head to the foot of the group of sixteen images (situated) all over the Vishṇu temple, as well as of other images, will now be described briefly.

3-8. In comparison with the measurement of the Phallus (of Śiva), and next in order of the principal idol of Vishṇu, of the largest and the intermediate sizes, with regard to the breadth of half the adytum (central hall), to the breadth of the temple, to the door, to the base, and to the pillar, in cubit, in the *tâla* system, of nine varieties in comparison with the worshipper, in the finger (part) of the main idol or of the Phallus, and in the standard *aṅgula* unit: these are the twelve kinds of (comparative) measurement.

9. The six measurements beginning from the measurement of the Phallus are conducive to enjoyment, salvation, wealth, and success (? religion).

10. The measurements beginning with that in cubit are preferred for enjoyment and salvation.

11. The measurement in *aṅgula* is meant for those who are desirous of salvation. Whatever measurement is liked by the master should be used.

12. Therefore (of those), the measurement beginning from the principal Phallus, etc., will be described in order.

13. The Phalli are divided into two (main) classes: namely, the self-revealed (*Svayambhu*) and the man-made (*Mànusha*).

14. In case of the self-revealed (*Svayambhu*) Phallus, the measurement of the head should be the standard of measurement as compiled (from the extant examples).

15. The breadth should be measured by the broadest part of the width.

16. In case of the man-made (*Mānusha*) Phallus, the measurement of the head should be set aside as the unit.

17. The breadth and width (of this Phallus) may be ascertained by any part of the body.

18. With regard to the height of these two Phalli the wise (architect) should exclude the measurement of the altar.

19-23. The height of the Phalli proper, and their width may be equal; according to some that (the width) may be three parts out of sixteen parts (of the height); these proportions may be increased or decreased according to the different countries and times; or (in other words) these parts may be decreased by three, five, seven, nine, eleven, or thirteen parts (out of the sixteen parts of the height).

24. This is said to be the measurement in regard to the Phallus. Now will be described the measurement in comparison with the idol of Vishṇu.

25-27. Equal to the full length of main idol (of Vishṇu), extending to its eye, nostril (tip of the nose), chin, root of the arm, breast, heart, navel, and the sex organ: these are the nine kinds of *utasava* height (of the sixteen subordinate deities of Vishṇu).

28. The nine kinds, consisting of three in each of the three types, namely, the smallest, etc., are (called) the *kautuka* height when measured in a half unit of that (*utsava* height).

29-31. The height of the central hall (adytum) proper may be divided into eighty-one parts, and together with the those (above mentioned) nine measures it may thus be of ninety kinds: thus should be made the measurement in comparison with the adytum (central hall).

32. The measurement in comparison with the breadth of the temple (lit., main edifice, *prāsāda*) should be the same as in the case of the adytum.

33-35. It (the height of the family deities of Vishṇu) may be equal to the height proper, the breadth or the length of the door (of the temple), or may be a quarter part more or less in the three units: thus should be (ascertained) the nine kinds of height in comparison with the door (of the Vishṇu temple).

36-37. Then with regard to the two (units), namely, the height of the base and the height of the pillar (of the temple): each of these may be divided into nine parts (each of which may be the height of the family deities of Vishṇu): these are said to be (another two sets of) nine measurements.

38. The nine kinds of height in cubit should be from one to nine cubits.

39. The measurement in the *tāla* system should be from one to nine *tālas*[1].

40. The nine kinds of height in the fist unit (*mushṭi*) should be from one to nine fists[2].

41-43. Equal to the height of the master, extending (from the foot) to the eye, the nostril (tip of the nose), the chin, the shoulder, the breast, the heart, the navel, and the sex organ: these should be the nine kinds of height (of the deities) in comparison with the measurement of the master.

44. Of these, the (first) eight should be employed for the *Jāti* class (images).

45. The wise sculptor should consider the auspicious six formulas[3], namely, the *āya*, etc. (with regard to this measurement).

46-47. What is known as the inauspicious *āya*, etc., being divided into thirty parts, and increased by one would become the auspicious, *āya*, etc.

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[1] See the writer's Dictionary, pages 221-222, and the note under lines 51-52 of this chapter.

[2] This would be an extra unit and is not included in the twelve units, compare lines 3-8.

[3] That is, *āya*, *vyaya*, *ṛiksha*, *yoni*, *vāra* and *aṁśa* (see lines 60-62, pages 603-604, and the writer's *Dictionary*, page 600).

48. All the (varieties of the) comparative measures of the subordinate images (*utsava*) should be verified by those (six formulas) ending at *aṁśa*.

49. The *aṁśaka* verification of the measurement is thus stated. The *aṅgula* measurement will be described now.

50-52. What is taken as the height of the Phallus being divided into one hundred and twenty-four parts, each of these is called a *Liṅga aṅgula*; when the height of the idol is divided according to the *tāla* unit, each part is called a *Bera aṅgula*.[1]

52-55. The *māna* (standard) *aṅgula* is stated here: the breadth of eight *yavas* (barley corn) makes one *aṅgula*; this should be in the finger (*aṅgula*) of the gods (and the largest type); in the intermediate size seven *yavas* make one *aṅgula*, and six or five (*yavas* make a small *aṅgula*): thus is stated to be the *māna* (standard) *aṅgula*; the same should be (what is called) the *dehalabdha aṅgula* (i.e. the finger of the idol or the worshipper).

56-59. For the verification by the formulas of the auspicious *āya*, etc., an additional height, except in the *Jāti* class, may be given (to the image) and it should begin from two or three *aṅgulas* (in the small size), from five *aṅgulas* in the intermediate size, and from seven *aṅgulas* (in the large size), and end at one hundred and twenty-five *aṅgulas*, the increment being by two *aṅgulas*.

60-62. (To work out the six formulas), it (the measure of length, etc.) should be multiplied by eight, nine, three, eight, nine, and four or three respectively; and the (six) products should be divided by twelve, ten, eight, twenty-seven, seven, and nine respectively, the

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[1] *Tāla* ordinarily means a span, but in sculptural measure it is taken to imply the length of the face up to the crown of the head. The number of the *tāla* indicates the number of parts into which the total height of the image is divided, e.g., in ten *tāla* if the measure of the face be twelve parts the total height should be divided into 10×12 or 120 parts: each of these is stated here to be a *Bera* (idol) *aṅgula*.

remainders would indicate the *āya*, *vyaya*, *yoni*, *nakshatra*, *vāra*, and *aṁśa*, respectively.

63-65. Poverty, death of the wife, achievement of fortune, victory, agreeable surprise (*adbhuta*), fruition, salvation, enjoyment, acquisition of wealth, acquisition of the two, namely, fame, and plenty (abundance) : these are the respective fruits of the twelve *ayas*.

66-68. Achievement of success, victory, and fortune, loss of wealth, enjoyment, destruction of the enemy, disease of the eye, acquisition of wealth, happiness, and friendship : these are the respective fruits of the ten *vyayas*.

69. In the formula of *āya* when there is no remainder left, it is conducive to religious merit, and it is conducive to happiness when there is no remainder in the formula of *vyaya*.

70. It is always conducive to all prosperity when the *āya* is greater and the *vyaya* is less.

71-72. The fruit which is auspicious becomes defective (i.e., inauspicious) when the *āya* is less (than the *vyaya*), that is when the *vyaya* is greater (*pūjya*) ; but there is no defect if it (the *vyaya*) be equal (to the *āya*).

73. (Of those eight *yonis*) the horse, the lion, the bull, and the elephant are the auspicious *yoni*.

74-75. (Of the twenty-seven stars), the birth-star (under which one is born), the second, the fourth, the eighth, and the ninth : these are the auspicious *ṛikshas* : the name, the birth, and the ninth planet should be (particularly) taken into consideration in counting.

76-78. In the former calculation should be included the *rasi* (sign of zodiac) of the master including the *mina* (the last one) and ending at the second (*vṛisha*), or excluding the *mina* and including the third (*mithuna*) : thus up to the third, the stars are auspicious[1].

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[1] Compare chapter IX, 88—93, and the writer's *Dictionary*, pages 600, 609—611.

79. (Of the seven *vāra* or week days) Thursday, Friday, Wednesday, and Monday are the auspicious days.

80. (Of the *aṁśa*) excluding *taskara* (thief), *dhana* (wealth) and *shanda* (bull) all others are auspicious *aṁśa*.

81. All the *rāśis* except the sixth and the eighth are auspicious[1]

82. The elephant (*gaja*) is said to be all auspicious (among the *yonis*); but the *mānusha* (man) and the *āsura* (demon) *yoni* should be (particularly) avoided.

83. One eye, two eyes, or the combination of *aṁśa* should be avoided (particularly among the *aṁśa*).

84. The auspicious *yoga* (conjunction) brings in prosperity, and the inauspicious *yoga* causes death (in all cases).

85–87. Where there is more merits than demerits, there is no defect in it, but if the demerits be more than the merits, it would be all defective; therefore, the learned (sculptor) should avoid (the defective calculation) and follow the custom prevalent among the people.

88–89. Therefore, the height in the *mātra* (standard) *aṅgula* should be used (in measuring the idol) for personal worship, but the best artist should verify (the measure) by the formulas of the *āya*, etc., in each case as aforesaid.

90. All others should be accepted by the best artist as said before.

91–93. These comparative measures of the idols of Brahmā, Vishṇu, Rudra, Buddha, Jina, and (all) other images, similarly of the subordinate images (*utsava*), in the stationary or the movable types, have been compiled (from the extant objects).

Thus in the *Mānasāra*, the science of architecture, the sixty-fourth chapter, entitled:

The description of the comparative measures of images.

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[1] This formula is an alternative to the *aṁśa* formula (see the writer's *Dictionary*, page 600).

CHAPTER LXV

THE LARGEST TEN TĀLA MEASURES

1. The details of the largest type of the ten *tāla* measure will be given now.

2. The height should be preferably taken from the crown of the head to the foot.

3. That (height) should be divided into one hundred and twenty-four (equal) parts.

4. (The measure) from the crown to the hair (on the forehead) should be preferably four parts.

5. The extent of the face from the hair (on the forehead) to the chin should be thirteen parts.

6. The measurement of the height of the neck should be four and a half parts.

7-8. The distance from the end of the neck to the end of the heart, the belly (from the heart) to the limit of the navel, and the distance from the navel to the limit of the sex organ should be thirteen and a half parts each.

9. The length of the thigh from the sex organ (to the knee) should be twenty-seven *aṅgulas* (parts).

10. The height (i.e., length) of the knee should be four parts, and the leg should be equal to the thigh in length (i.e., twenty-seven parts).

11. The foot should be equal to the knee in height (i.e., length, i.e., four parts).

11-13. The length of the face should be divided into three portions: (the first portion from the line of hair on the forehead) ending at the eye-line, below that the next (two) portions (going down to the lip-line) should extend to the end of the line over the glottis.

13. he length of the arm should be twenty-seven parts.

14-18. The elbow should be of two parts, and the length of the forearm extending to the wrist twenty-one parts, and thence the length of the palm up to the tip of the middle finger thirteen and a half parts; the length of that middle finger should be six and a half parts, and the remainder the length of the palm (proper).

18-20. The foot from the largest toe to the heel should be seventeen parts. The length of that largest toe is said to be four-and-a-half parts, and a half of that should be its width.

21. A half of that (width) should be the breadth of the nail, and the length (thereof) should be less (than the width of the finger) by a quarter.

22-23. The nail should be of crescent shape (lit., circular-rectangular) and its fleshy tip (lit., face) should be one part; the two sides of the nail should be also (fleshy), and the remainder of it should be uniformly fleshy.

24. The length of the fore-finger should be four and a half parts less one *yava* (i.e., one-eighth part).[1]

25. The length of the middle finger should be four parts less one-quarter.

26. The length of the ring-finger is desired to be three parts and one *yava*.

27. The length of the little finger should be two-and-a-half parts.

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[1] Generally 8 *yavas* make one *aṅgula* (see chapter II, line 16.)

28-30. One part and one *yava*, one-and-a-half parts less one *yava*, three-fourths of a part plus one *yava*, and three-fourths part : these should be preferably the respective breadth of the (four) fingers from the fore-finger to the little finger.

31. The breadth of the nails (thereof) should be a half of the breadth of the respective fingers as said before

32. A middle line should be drawn along the length of the sole from the eye (i.e., middle) of the ankle to the tip of the sole.

33. (The distance) from that line to the root of the heel should be eight parts plus six *yavas.*

34. The length (thereof) should be four parts, and the breadth five parts plus one *yava.*

35. The length from the side to the heel should be three and a half parts.

36. The region of the root of the heel below the ankle should be six parts.

37. The breadth of the middle of the sole should be six parts plus six *yavas.*

38. The breadth at the fore-part should be six parts, and its thickness three *aṅgulas* (parts).

39. The height at the middle of the foot should be preferably four and a half parts.

40. The toes should have two divisions (*parva*) ; and the rest should be made at one's discretion.

41. The breadth of the ankle is known to be five and one-fourth parts.

42. The breadth of the tubular vessel above should be four and one-fourth parts.

43. The width of the legs at the middle should be made six and a half parts.

44. The width at the root of the leg should be preferably eight parts.

45. The width at the region of the knee should be made nin' parts.

46. The width at the middle of the thigh is said to be twelve parts.

47. The width at the root of the thigh should be thirteen-and a-half parts.

48. The width at the hip should be twenty parts, and the buttocks above should be broad.

49. The width of the belly at the middle should be eighteen-and-a-half parts.

50. Above that the width up to the heart should be sixteen parts.

51. The width at the region of the chest should be eighteen-and-a-half parts.

52. Above that the distance between the two arm-pits should be twenty-one parts.

53-54. The breadth, above that, between the arms should be twenty-two parts ; and the breadth, above the latter, between the root of the arms, should be twenty-four-and-a-half parts.

55. The width of the neck should be nine parts and it should be made uniform.

56-57. The breadth of the face should be twelve parts ; above and therefrom the breadth of the head measured by the end of the hair should be ten parts.

58-59. The part between the hair and the eye line being divided into two (equal) portions, one of these should be the height of the forehead, and the other the region of the eyes.

60. The space for the beautiful brows should be left between the eyes and the forehead.

61. The length of the eyebrow should be five parts, and the breadth half a part.

62. A half of that should be the breadth at the middle, and the brows should gradually taper from the root to the other end.

63. The distance between the two brows should be one-fourth part plus six *yavas*.

64. The length of the eye should be three parts, and its breadth one part.

65. The distance between the two eyes should be preferably two parts.

66. The breadth of the two lids (lit., the protectors) over the eye should be one-third or two-fifths of a part.

67-68. Inside those (eye-lids) should be the interior of the eye which should be divided into three portions ; one of these should be the black ball (retina) and (on each side) the rest (of the eye) should be a white ball.

69. The luminous ball (iris) like the black ball should be one part.

70. The luminous ball (iris) is known to be within the black ball (retina).

71. The portion between the black ball and the luminous ball in the centre of the eye (socket) should be one part.

72. The pupil (lit., sight ball) of the eye is said to be in the centre of the luminous ball (iris).

73. The breadth of the upper lens (lit., shields) should be two-and-a-half parts, and that of the lower lens (shields) three parts.

74. The wise artist should shape the eye like the fish, and the brow like the bow.

75. The length of the ear should be four parts, and the length of the tubular vessel greater by half a part.

76. The forepart of the ear should be made equal to the middle of the brow (i. e., the distance between the two brows).

77. The length of the long pepper like edge (of the ear) (*pippali*) should be equal to the breadth (of the ear), and its (own) breadth should be a half of that (length).

78. The distance between the tubular vessels should be three parts, and a half of that should be the thickness in conformity with the ear.

79. The breadth of the ear should be two-and-a-half parts, and the rest should be made at the discretion of an expert (sculptor).

80. The distance between the two, namely, the end of the eye and the end of the ear, should be seven parts.

81. The breadth of the nose should be two-and-a-half parts, and its tip one part.

82. The breadth of the nostril should be half a part, and its length six *yavas*.

83. The wind-pipe (*sushira*, hole) should be half a part, and its breadth five *yavas*.

84. The height of the tip of the nostril (*pushkara*) should be one part, and its breadth two parts.

85. The breadth at the middle of the nose should be three parts (?).

86. A half of that should be the breadth at the root, and the height should be proportionally one part.

87. The height of the nose from the root to the top of the *goji* (the bridge-like portion connecting the tip of the nose with the upper lip) should be two parts.

88. The tip of the nose (*pushkara*) and below that the *goji* should each be four *yavas* (i. e., half a part) in length.

89. The drip (*nimna*, the lower part below the *pushkara*) should be one *yava*, and the breadth three *yavas*.

90. Therefrom towards the front should be the *pāli* (the line bisecting the upper lip below the nose) made of one *yava*.

91. The breadth of the upper lip below that should be six *yavas*.

92. The fleshy portion connected with the lower lip optionally should be made of half a *yava*.

93. The lower lip should be one part, and its breadth and height should be equal.

94. Its (of the lip) length should be four parts which should extend up to the ends (corners) of the fleshy portion (*asrij*).

95. Three-and-a-half parts of the length of the lower lip should be shaped like the half-moon (i. e., crescent).

96-97. The upper margin should be three *yavas* in length and be furnished with intervals; and its breadth which should be symmetrical to the length should be two (*yavas*).

98. The teeth on the upper and lower jaws should be thirty-two (in number).

99. The length of the chin below the lower lip should be one part.

100-101. Of the remainder of the height at the end of the chin (i. e., the surface of the lower jaw), the breadth of the tip of the chin is known to be three-and-a-half parts.

102. The distance between the two, from the tip of the chin to the end of the ear, should be ten parts.

103. The height of the drip (*nimna*, i. e., cavity of the depressed line) bisecting the front of the chin should be one part.

104. The end of the chin should be semi-circular, and the half of its breadth on each side should be equal.[1]

105. The bridge (*goji*) from the tip of the chin (to the neck) should be one part plus two *yavas*.

106. The neck from below the lower jaw-bone to the middle and thence to the root of it is (divided into two parts each of which should be) two parts.

107. Thus should be the measure of the neck, and the wise (artists) should make the projection a half of that (neck).

108-109. The measurement of the (third) eye on the forehead should be three-fourths of (each of the) two eyes; or it (the third eye) may be a half or one-third (of the other two eyes) instead of three-fourths.

110. Destruction, preservation, and creation: these are (the three) eyes of Śiva.

111. The eye should be furnished with ninety-eight or ninety-nine lashes; the best artist should carve (images in this way) for worship.

[1] That is, this semi-circular edge of the chin or the lower jaw-bone is bisected by the drip.

112. The hairs on the neck should be discreetly made; their measurement (number) need not be specified.

113. Those (hairs) on the different parts of the face should be discreetly made in their proper places.

114. The breadth (width) at the middle of the arm should be eight parts plus two *yavas*.

115. The width of the elbow should be preferably seven parts.

116. The breadth (width) at the middle of the forearm should five parts plus one *yava*.

117. The width of the wrist-joint should be three-and-a-half parts.

118-120. The breadth at the root of the palm should be seven parts, the breadth at its middle should be six-and-a-half parts, and the breadth at the forepart of the palm should be five-and-a-half parts.

121. The length of the palm, on the outside, from the wrist-joint, should be six-and-a-half parts.

122. Out of those (parts of the palm) the fingers should be discreetly measured by the outer ide (of the palm also).

123. But the length of the thumb and other fingers mentioned above should remain as before.

124. The length of the ring-finger should be four and one-fourth pats.

125. The length of the forefinger should be five parts, and that (the length) of the thumb and the little finger should be four parts each.

126. The breadth (width) of the thumb at the root should be one and one-fourth parts.

127. The breadth (width) at the root of (both) the forefinger and the ring-finger should be one part.

128. The width at the root of the middle finger should be one part and three *yavas*.

129. The width at the root of the little finger should be six *yavas*.

130-131. The width at the tip of the other (i.e., excepting the thumb) fingers should be one part less out of sixteen parts (at the root) in each case; and they (these four fingers) should be divided into three portions (*parvan*, digit) each (and the thumb into two).

132. The breadth of the nail should be two parts, and the rest should be for the two sides.

133. If the breadth of the nail be four parts, the breadth of the finger should be one part more (i.e., five parts).

134. The length up to the tip of the nails should be preferably two *yavas*.

135-136. The length of the forefinger and the other fingers which have three divisions (digits, *parvan*) being divided into three parts, each of those three divisions of the four fingers should be one part.

137. The thumb should have two divisions (*parvan*), the length of it being divided into two (equal) parts.

138-140. In case of the fore-finger, the portions on the sides of the root should be the largest; the length of the two side-portions above the root and at their middle should be three parts, and the thickness thereof two parts; the length of the remaining portion up to the wrist-joint should be four-and-a-half parts.

141. Thence the thickness at the lower part of the thumb should be two-and-a-half parts.

142. Its width should be three parts, and the breadth of the hinder portion (lit., heel, *pārshṇi*) should be four parts.

143. Its thickness should be three parts, and at the tip one part and two *yavas*.

144. The width at the inner surface (lit., end) of the palm should be two parts; and its depth four *yavas*.

145-146. The figures of the lotus, the trident, the conch, and the disc (etc.), should be marked on the palm with fine lines; the rest (of the palm) and the sides (neighbouring portions) of the hand should be discreetly made by the wise (artist).

147. The breadth of the back of the head should be preferably nine parts.

148. The distance between the ear and the tip of the nose should be thirteen-and-a-half parts.

149. The shoulder above the line of the glottis extending to the neck-joint should be four parts.

150.* The hump extending from the neck-joint should be preferably five parts.

151. Thence the distance up to the line of the hip should be twenty-seven parts.

152. Thence to the end of the fundament (*pāyu*, anus) should be thirteen-and-a-half parts.

153. The breadth of the back-part (of this fundament) should be twenty-one parts.

154. The breadth of the buttocks at the back should be seventeen parts.

155. The width of the middle body above that should be equal to the width of the buttocks (i.e., seventeen parts).

156. The distance between the two breasts above that should be twenty-one parts.

157. The distance between the two arm-pits should be twenty-seven parts.

158-159. The distance below the backbone up to the middle of the hip-joint should be one part, and the breadth thereof should be discreetly made of two parts.

160. Thence the length of the rib (*phalakā*) up to the end of the belly should be twelve parts.

161. The distance between the two ribs (*phalākā*) should be four parts.

162. The height from the region of the ribs up to the end of the shoulder should be two-(five)-and-a-half parts.

163. The distance between the backbone (*bṛihatī*) and the arm-pit should be seven parts.

164. The distance from the backbone up to the limit of the breast should be sixteen-and-a-half parts.

165. The distance (of the backbone) up to the hip-line should be thirteen parts.

166. The distance (of the backbone) up to the root of the thigh should be equal (to that), and its projection four parts.

167. The width of the two balls should be nine parts each, and they should be quite circular (round).

168-169. The width of the nipple of the breast which should be quite circular should be two parts; and the girth extending to the two sides of the breast and the elevation of the breast should be equal to each other.

170. The drip (i.e., depth) for the glottis and the heart is known to be one *yava*.

171-172. The distance from the glottis to the breast and the distance of the arm-pit from the glottis should be thirteen-and-a-half parts each. The depth of the navel (cavity) should be two *yavas*.

173. The surrounding circular zone of the navel should be made like the root (basis) by the wise (artist).

174. The length of the belly from below the navel to the limit of the hip should be six parts.

175. The distance from the navel to the part where the (loin) cloth is worn (*vastra-sīmā*) should be preferably four parts.

176. The height of the hip ending at the root of the sex-organ should be seven-and-a-half parts.

177. The breadth of the back (*pīṭha*) of the sex-organ should be preferably four parts.

178. Thence (i.e., from the root) the length of the sex-organ should be twelve parts.

179. The length of the testicle should be two-and-a-half parts and its breadth should be one part.

180. The breadth of the sex-organ should be five parts, and the rest should be made at one's discretion.

181-183. If there be, for the sake of beauty, one part more or less than the given measurement of all those limbs, there will be no defect (in that), but if the measurement be more or less by more than that (i.e., one part), it would be all defective.

184. Therefore the artist should avoid the unauthorised measure (*pratimāna*).

185-186. The best measurer should (thus) measure (the idols of) Brahmā, Vishṇu, and Rudra (Śiva), and also the measurement of (all) other gods should be (accurately) carried out because it is auspicious to do so.

187. Thus is described the largest type of the ten *tāla* measure by the leading sages (teachers).

Thus in the *Mānasāra*, the science of architecture, the sixty-fifth chapter, entitled:

The description of the largest type of ten *tāla* measure for images.

CHAPTER LXVI

THE INTERMEDIATE TEN TĀLA MEASURES

1. The details of (the intermediate type of) the ten *tāla* measure for the females (goddesses) will be stated now.

2. (The height) from the foot to the crown of the head should be one hundred and twenty *aṅgulas* (parts).

3. One-eighth of that (*aṅgula*) is said to be the *yava* measurement (i.e., eight *yavas* make one *aṅgula*).

4. The height of the head from the crown to the hair (limit on the forehead) should be four parts.

5. Below that up to the eye-line the distance is known to be five parts.

6. The length of the nose (from the eye-line) up to the tip (lit., nostril) should be preferably four parts.

7. (The distance) from the nostril to the chin should be three and a half parts.

8. The neck-joint should be half a part, and the height of the neck four parts.

9. (The distance) from the glottis (i.e., lower limit of the neck) to the end of the heart should be thirteen parts.

10. The distance therefrom (i.e., the heart) to the navel, and (the distance) from the navel to the sex-organ should each be equal to that (thirteen parts).

11. The height (length) of the thigh from the sex-organ (up to the knee) should be twenty-six parts.

12. The height (length) of the knee should be four parts, and the leg should be equal to the thigh (i.e., twenty-six parts).

13. The height (i.e., length) of the foot extending between the heel and the large toe should be four parts.

14. The sole should be sixteen parts: this is said to refer to the length (of the foot proper).

15. The length of the arm from below (the end of) the line of glottis should be twenty-six parts.

16. The elbow should be two parts, and the length of the forearm up to the wrist twenty parts.

17. The palm (from the wrist-joint) up to the tip of the middle finger should be thirteen parts.

18. Of that length (of the palm) the length of the middle finger should be six parts.

19. The remainder should be the length of the palm (proper); the length of the thumb should be four parts.

20. The length of the forefinger and of the ring-finger should be five parts (*aṅgula*) and a half each.

21. The length of the little finger also should be preferably four parts.

22. The breadth of the face up to the ears should be optionally twelve parts.

23. Below that, the breadth of the face up to the ears should be eleven parts.

24. The breadth of the neck at the root, the middle, and the forepart should be seven parts.

25. The distance between the two arm-pits is stated to be fifteen parts.

26. Below that, the breadth (of the chest) along the breast should be also fifteen parts.

27. The breadth of each breast should be nine-and-a-half parts.

28. The elevation (of the breast proper) should be four parts and a half, and that of the nipple (lit., eye of the breast) along the middle should be one part.

29. The width of the nipple zone (of the breast) is said to be two parts.

30. The breadth below the breast up to the heart should be thirteen parts.

31. The width at the middle-belly should be eleven parts.

32. Below that, the breadth at the navel region should be thirteen parts.

33. The breadth along the region below the navel should be fifteen parts.

34. Below that, the breadth at the buttocks should be twenty parts.

35. The width at the hips below the buttocks should be twenty-four parts.

36. The width at the root around each of the thighs should be thirteen parts.

37. The width at the middle of the thigh is said to be twelve parts.

38. The width at the forepart (of the thigh) should be nine parts. The breadth of the knee should be seven parts.

39. The width of the leg should be six parts at the root, and five parts at the middle.

40. The breadth of the tubular vessel (? calf) should be four parts, and the breadth of the ankle four-and-a-half parts.

41-42. The breadth of the sole should be preferably four parts (at the middle); the breadth at the forepart should be five parts, anp the breadth of the heel four parts.

43. The length of the large toe should be four parts, and the foretoe equal to that (i. e., four parts).

44. The length of the middle toe should be three and a half parts.

45. The length of the middle toe should be three parts, and the length of the little toe two parts.

46. The breadth of the large toe should be two parts, and the breadth of the foretoe one part.

47-48. The breadth of the other three toes should be respectively seven, six, and five *yavas*: these are said to be the breadth of the toes from the middle to the little.

49-50. The width at the root of the arm should be three parts more than that of the leg (i.e., nine parts); the breadth (width) should be six parts and a half at the middle, and six parts at the forepart (of thearm).

51. The breadth of the elbow is said to be five parts and a half.

52. The width at the root of the forearm is known to be five parts.

53. The width should be four parts and a half at the middle, and four parts at the forepart (of the forearm).

54. The width of the wrist-joint is known to be three parts.

55. The breadth of the palm extending from the little finger to the thumb should be five parts.

56. The breadth (at the root) of the forefinger should be six *yavas*, and equal to that should be the breadth of the ring-finger.

57. The breadth at the root of the little finger should be five *yavas* and a half.

58. The breadth at the root of the middle finger should be seven *yavas*.

59. The brow should be situated between the two; namely, the eye-line and the limit of the hairy part (close to the ear).

60. The breadth of the eye should be one part, and the length (of the eye) three parts.

61-62. The breadth of the nose beyond the exterior (i.e., up to the tip) of the nostril should be two parts; the breadth should be one part at the middle, and a half of that should be the breadth at the root (of the nose).

63. The distance between the two eyes should be two parts less one-fourth (i.e., one-and-three-fourths parts).

64. The distance between the roots of the two brows is said to be one part.

65. The length of the brow should be nine parts, and the breadth of the brow two parts.

66. The length of the eye being divided into three parts, the one part in the centre should be the (measure of the) black ball (*iris*).

67. The brow should be shaped like the bow (arch), and the eye like the fish.

68. The breadth and the height of the nostril should be discreetly made of half a part.

69. The nose should be shaped like the sesame flower, and the nostril like the seed of the long bean (*nishpāva*).

70. The length of the face ending at the corner (*srikkā*) should be made of four parts.

71-72. The width of the upper lip should be five *yavas*, and that (width) of the lower lip six *yavas*, and the length (thereof) should be two parts.

73. The face should be discreetly (gracefully) shaped like the hen's egg.

74-75. The ear should be equal (in shape) to the middle of the brow, and the height of the ear four parts; equal to that should be the

length of the suspending part (*nāla*), and the thickness (thereof) half a part.

76-77. The female organ (vulva) should be shaped like the leaf of the holy fig tree (*aśvattha*), and its breadth should be four parts; its length is said to be seven parts, and the breadth above should be equal to the length.

78. The wise (sculptor) should make the rest as in the case of the largest type of the ten *tāla* measure.

Thus in the *Mānasāra*, the science of architecture, the sixty-sixth chapter, entitled:

The description of the intermediate type of ten *tāla* measures for the female figures.

CHAPTER LXVII

THE MEASURES ALONG THE PLUMB LINES

1-2. The description of the measures along the plumb (lit., measuring) lines of all the gods and goddesses in the straight (? recumbent), erect, and the sitting postures will now be given in detail.

3-5. Equal to the length of the idol, three-fourths, and one-half of that : these are said to be the three kinds of length (of the *pralamba-phalakā* or the board from which the plumb lines are drawn); and its breadth should be ascertained by the same above mentioned proportions[1] ; and its thickness should be four, three, or two *aṅgulas*, the measurement being in the *deha-labdha aṅgula* (finger)[2].

6. Such should be the features of the measuring board (*pralamba-phalakā*); it should be made quadrangular (lit., four cornered).

7. The pedestal (lit., seat, on which the idol is placed with the board on its head) should be made equal to that (board), and its thickness should be one standard *aṅgula* (i.e., three-fourths inch).

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[1] That is, the breadth should be equal to, three-fourths or one-half of the length.

[2] One of the equal parts into which the whole length of the idol or the master is divided, see Chapter LXIV, 52-55, p. 603.

8-9. There should be fixed four, three, two, or one small pillar (post) upon the seat; and the idol should be placed between them (the board and the seat).

10-11. The height of the post (above the seat) should be one and a quarter or one and a half of the height of the idol; and the width of the post should be made by the carpenter at his own discretion.

12-13. The measuring board should be discreetly fitted to the top of the posts, and the measuring strings should be suspended from the board to the seat.

14-15. At the fore-end of the string should be tied up a ball-like plummet made of iron (metal) or stone; and the best artist should make a hole (notch) through it and then tie it up with the string.[1]

16. Thus should all the strings be preferably fixed to the board.

17-18. They (the strings) should be suspended by the front and the back sides, the middle of the body, and the two sides: these are said to be the five strings (lines) in the erect or the sitting posture (of the idol).

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[1] Compare Rao, *Hindu Iconography*, Vol. I, Appendix B, pages 29—32, where the substance of the details from one or more unspecified *Āgamas* are given without any attempt at translating the technical terms referring to the plumb lines which seem to be seven in number.

See also Coomaraswamy, *Mediaeval Sinhalese Art*, pages 151-152, 156 where, in referring to a recent text, *Śāriputra*, the author himself confesses "I do not give the *text* and *translation* of the *Śāriputra* in full . . . . . . The parts of the translation omitted are . . . . . some of the more minute measurements, and some of the verses of which the exact meaning is not clear." Herein also reference seems to have been made only to seven plumb lines.

In the present text, it should be noticed, minute details and measurements are given in regard to as many as eleven plumb lines in each of the four poses, namely, *sama-bhaṅga*, *ābhaṅga*, *atibhaṅga*, and *tribhaṅga*, each being again in the three postures, namely, *sthānaka* (erect), *āsana* (seated), and *śayana* (recumbent).

19. There are known to be the seven strings with another two suspended from the two edges of the face.

20–21. (Two) strings may be also suspended by the (two) sides of the back of the head at the edges of the face: thus are said to be the nine strings (lines).

21–22. The eleven lines will be stated here; two more strings should be suspended by the two arm-pits, and there will be the eleven lines (strings).

23–24. As an alternative, one line may be drawn by the middle of the back, one by the end of the chin, four by the four sides, and four through their middle, and the fifth chief one by the centre, (thus there being eleven lines).

25–27 Otherwise, one line should be drawn by the front side passing through the middle of all (limbs), and the (ten) lines should be drawn by the two sides of the nostril (*puṭa*), the two ends of the face, the two arm-pits, the two eyes, and the two sides of the arms: these are said to be another (set of) eleven lines.

28–29. With regard to the sitting posture, the four strings (lines), namely, the two by the sides of the arms, and the two by the sides of the nostril should be omitted, and all the rest should be drawn.

30. The wise (sculptor) should draw the eleven lines in the erect posture (only).

31–39. The strings should be suspended (i.e., lines should be drawn) passing by the middle of the forepart of the crown of the crest jewel, and by the middle of the crown; by the middle of the root of the crown fillet, and by the middle of the forehead; by the middle of the two brows, by the middle of the nose, and by the middle of the chin; by the middle of the glottis, by the middle of the heart, below that by the middle of the navel, and similarly by the middle of the sex-organ; by the middle of the root of the two thighs, and by the middle of the two knees; by the middle of the two tubular vessels (calfs), and by the middle of the two heels; by the middle of the two soles, and by the middle of the two large toes; and likewise should be drawn the lines by the wise (sculptor) touching the belly and the forepart of the nose.

40. The distance from that (central plumb) line to the crest jewel should be twelve parts (*aṅgulas*).

41. The distance from that line to the root of the crown should be six parts.

42. The distance from that line to the middle of the forehead should be two parts.

43. The distance from that line to the middle of the glottis should be six parts.

44. The distance from that line to the end of the heart should be half a part.

45. The distance from that line to the limit of the navel should be one part.

46. The distance from that line to the root of the sex-organ should be three parts.

47–48. Here will be stated the distance of that line from the two lines drawn by the (two) sides of the body in the erect or the sitting posture, specially in the erect posture.

49. The distance from that line to the root of the thigh should be two parts.

50. The distance from that line to the middle of the knee should be four and a half parts.

51. The distance from that line to the middle of the two legs should be six parts.

52. The distance from that line to the end of the tubular vessel (calf) should be seven and a half parts.

53. The uniform legs should be made in the erect posture, and the body should be straightly lengthened.

54. The distance between the two largest toes should be eight parts.

55. The distance between the middle of the two soles should be six parts.

56. The distance between the middle of the two heels should be four parts.

57. The distance between the two tubular vessels should be six parts.

58. The distance between the middle of the two legs should be five parts.

59. The distance between the middle of the two knees should be four parts.

60. The distance between the middle of the two thighs should be two parts.

61. The distance between the root of the two thighs should be one part.

62. The two hands should be kept hanging (straight downwards); their distance (from the body) is stated here.

63. The distance of the buttocks by the side of the elbows should be six parts.

64-65. The distance from the forearms by the hips should be three parts, or it may be two parts, and by the wrist ten parts.

66. The distance between the middle fingers by the side (*pārśva*) should be ten parts.

67. Thus should be the measurement of gods and goddesses in the erect or the sitting posture.

68. The upper body should be made uniform when it (the idol) is placed on a broad lotus seat.

69. From the (two) knees upwards to the hair (on the head) it should be an equilateral triangle.

70. The outer side of the arm should be uniform (lit., measured equal) to the outer side of the knee.

71. Both the two arms and the two knees should be measured left and right.

72. The distance from the sex organ to the eye of the ankle should be six parts.

73. The distance between the buttocks and the side of the elbows should be six parts.

74. The five (fingers) on the forepart of the palm rising with the forearm should be placed on the shoulders.

75. If it (the idol) be in a half-sitting posture, one leg should be kept hanging.

76. On the side of that (hanging) knee its distance should be two or three *aṅgulas* less.

77. The distance from that (central plumb) line to the forepart of the hanging leg should be twelve parts.

78. Thus is described that (half) sitting posture of all gods and goddesses.

79. The (plumb) lines should be drawn by the front, the middle, and the back.

80. They should be (also drawn) by the middle of the forepart and root of the crown.

81. They should be drawn by the middle of the hump and the middle of the backbone.

82. (They should be drawn) by the middle of the two buttocks and the two thighs.

83. They should be drawn also by the middle of the back of two knees, and by the middle of the two heels.

84. These are the principal lines; the side lines will be stated here.

85. (They should be drawn) by the middle of the hole of the two ears, and by the middle of the side of the body.

86. The side lines should be also drawn by the middle of the ankle.

87-88. They should be drawn by the outer side of the sexorgan, by the middle of the nipple of the breasts, and by the middle of the thighs, the knees, and the forefingers.

89. (The distance) from the line of the arm-pit to the side of the hip should be eight parts.

90. They (those) lines should be drawn by the side of the hip of the female deities to the little toes.

91. They should be drawn by the outside or the middle of the hip, and the side of the nostril.

92. These are the working (practical) lines which should be drawn by the best artist.

93. The lines by the sides of the two hands should be drawn by the side of the knees.

94-95. The whole body should be made vertically erect, and this disposition should be maintained on the front, the back (and the sides); the erect attitude (of the body) should be common (to all the limbs).

96. The measurement according to the poses of all gods and goddesses will be stated here.

97. The *ābhaṅga* (a little bent), the *sama-bhaṅga* (equipoised), and the *atibhaṅga* (greatly bent): these are the three poses.[1]

98. Three, four and five parts: these should be the (three) respective heights (of idols in the aforesaid poses).

99-102. The (plumb) lines should be drawn by the middle of the crown, and by the middle of the for head, by the middle of the tip of the nose, and by the middle of the side of the glottis, by the middle of the nipple and the side of the navel, as aforesaid, and by the middle of the side of the thigh and of the ankle as said before.

103. These should be the plumb lines in the *ābhaṅga* pose; the plumb lines of the *sama-bhaṅga* pose will be stated below.

104-107. The plumb lines should be drawn by (the middle of) the side of the crown and the side of the forehead; by the side of the nostril and the middle of the nipple of the breasts; by the (middle of the) side of the navel, the thigh, the leg, and the ankle as said before: thus should be drawn the plumb lines; this is known to be in the *sama-bhaṅga* pose.

108-109. The (plumb) lines should be drawn in the *atibhaṅga* pose by the front side of the crown, the middle of the eye, the side of the breast, the middle of the thighs, the knees and the legs.

110 The distance between the two eyes of the ankles in that (*ābhaṅga*) pose should be three parts.

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[1] Cf. The *Tribhaṅga* (bent in three places) pose which is mentioned later (line 124); for fuller details see the writer's *Dictionary*, pages 446 447.

111. The distance between the two knees should be discreetly made eight parts.

112. The distance between the root of the two thighs should be two and a half parts.

113. The distance between the tip of the two largest toes should be twelve parts.

114. The measures of the interspace in the *ābhaṅga* pose are thus described; those of the *samabhaṅga* pose will be stated here (below).

115. The distance between the two largest toes should be sixteen parts.

116. The distance between the two heels should be four parts, and between the two knees ten parts.

117. The distance between the two thighs at the root should be one part.

118. These are the measures in the *sama-bhaṅga* pose; the measures in the *atibhaṅga* pose will be stated here (below).

119-120. The distance between the two heels should be five parts, and the distance at the tip of the two largest toes, that is, between the middle of those two, should be twenty parts.

121. The distance between the two knees should be twelve parts.

122. The distance between the two thighs at the root should be two and a half parts.

123. These are the measures in the *atibhaṅga* pose; all these should be discreetly made.

124. The measurement of the distance from the plumb line in the *tri-bhaṅga* (three bent) pose is likewise stated.

125. The distance from that (plumb) line to the forehead should be two parts.

126. The distance from that line to the knee should be six parts.

127. The distance from that line to he heart should be one part.

128. The distance from that line to the limit of the navel should be one and a half parts.

129. The distance from that line to the limit of the sexorgan should be three parts

130. The distance from that line to the middle of the thigh should be two parts.

131. The distance from that line to the end of the knee should be six parts.

132-133. The distance of that line from the end of the tubular vessel should be eight parts; the sculptor (*vardhaki*) should make this between the two lying feet.

134. The plumb line should touch the tip of the nose and the (middle) part of the belly.

135. As an alternative the distance at the belly part of the female deities may be one part.

136-137. The distance of the right hand of the female deities up to the breast, the edge of the hip (zone), and ending at the largest toe should be four parts.

138. The distance between the buttocks and the elbows in that (*tri-bhaṅga*) pose should be six parts.

139. The distance between the hand when kept hanging from the shoulders should be as said before.

140. They should be furnished with their special marks, complexions, and ornaments.

141-142. For all the architectural objects (buildings), images and idols, etc., should be made as prescribed; this would bring forth all prosperity, fruition, success (lit., salvation), and other fruits.

143. It is dangerous to do the reverse through ignorance, with regard to anything concerning the architectural and the sculptural objects.

144. The learned artist should, therefore, be careful to avoid (any mistake), and to do all things as said before.

145-148. All the architectural and the sculptural objects, such as temples (edifice, *harmya*), courts (*prakāra*), pavilions (*maṇḍapa*), mansions (*śālā*), royal palaces, phalli (of Śiva) and idols of gods and others should be made as said before for the sake of prosperity.

Thus in the *Mānasāra*, the science of architecture, the sixty-seventh chapter, in the sculptural section, entitled:

The description of measures along the plumb lines.

CHAPTER LXVIII.

THE CASTING OF IDOLS IN WAX.

1. The casting of idols in wax (*madhūchchhishṭa-kriyā*) will now be described fully.

2-3. Śaiva, Pāśupata, Kāla-mukha, Mahā-vrata, Vāma, and Bhairava : those are the six respective *Jyotis* (light) phalli (of Śiva) as laid down in the *Tantra* (scripture).

4-5. Agastya, Kāśyapa, Bhṛigu, Gautama, Bhārgava, Gālava and others[1] are said to be the sages (whose idols are made) by this treatment (of casting in wax, *karshaṇa*) for worship (construction).

6. All those six (groups of phalli and idols) should be made according to rules of their scriptures with a view to acquiring prosperity.

7-8. If the (directly) reverse of what is laid down in those sciences be followed, it would always cause danger and difficulties, but if what is not laid down in those sciences be adopted (for improvement) there would be no defect in that.

9-21. Viśvakarmā, Viśveśa, Viśvasāra, Prabodhaka, Vṛita, Maya, Tvashṭṛi, Manu, Nala, Mānavin, and Mānakalpa, very celebrated (i.e., eminent) Mānasāra, Prashṭar, Mānabodha, Viśvabodha, Naya, Ādisāra, Viśāla, and Viśva-Kāśyapa, Vāstubodha, Māhātantra, Vāstuvidyāpati, Parāśarīyaka, the great sage Kālayūpa, and those named as

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[1] A slightly different list of *seven* sages is given in chapter LVII 2-3, p. 567.

Chaitya, Chitraka, Āvarya, together with Sādhakasāra, Bhānu, Indra, Lokajña, and Saura who are the best artists: they are stated to be sages and are thirty-two in number; they are thus known by their surnames; these artists are competent for all kinds of artistic work.

20-22. In the bright or dark fortnight of all months, on an auspicious moment of auspicious *lagna* (meeting), *nakshatra* (planets), and *yoga* (conjunction), both the chief architect (*sthapati*) and the chief assistant (*sthāpaka*) should make the pit (for casting the image) with the usual incantations (*mantra*).

23. Then the artist (sculptor) should besmear wax (over the idol) according to rules of the science (as stated below).

24-25. The sculptor (*vardhaki*) at the command of the chief architect (*sthapati*) should think over (lit., meditate on) the correct image, and purify with the five powders (*pañcha-varṇa*)[1] the idol to be cast in wax.

26-27. This (process) is recommended for the transitary idol, stationary or movable; therefore it should be made with all care and attention so that there may not remain any defect (or flaw).

28. The eyes (of the idol) should be furnished with crystal, and covered with the spider's net.

29-30. The hands (arms) of all idols should be covered with a copper-leaf, or that (copper-leaf) should be fixed at the root of the wing of those which have wings.

31-32. All the nails and the two feet also should be fixed with a copper-leaf and optionally the crown of the head and particularly the ornaments should be fixed with a peg.

33-34. The crystal and gems when inserted (to eyes, etc.) should be covered over with a leather bag discreetly besmeared with the powders of all the trees, namely, the mango, etc.[2]

35-36. In order to make them strong the idols should be furnished with wooden nails, even if they (i.e., the idols) be made of materials liable to be melted, there will be no defect in that.

[1] Powders made of dried or fried bones of the mango and other trees.

[2] See line 25 and the note thereunder.

37. Adorned with all ornaments the idol should be taken round the village.

38. This should be shown to the worshippers who would want to worship it.

39. Therefore, for the sake of the selection of the god, the idol may be taken from village to village.

40. Afterwards (i.e., if the idol be approved of) it should be taken into the studio of the artists.

41. The best artist should measure it along the length, height, and width.

42-43. (After correct measurement) it (the idol) should be besmeared with wax up to some two or three *aṅgulas* ; upon that (coating) it should be (again) besmeared with earth, and then it should be dried up by the experts.

44. That idol (lit., ball) should be dried up and besmeared with a new coating of wax again.

45. If the master so wishes, it may be covered with metals (iron) ; that is preferred.

46. The half, besmeared with earth, should be left out, and the rest should be washed with water by sprinkling [1].

47. The whole body of the idol should be purified, and besmeared with white sandal and perfumes (after completion).

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[1] According to the *Suprabhedāgama* (XXXIV, 2) "If the image be required to be made of earth, rods (of metal or wood) must be (inserted in them), if of metal, they must first be prepared well in wax."

According to the *Karaṇāgama* (II. V. 41) "If images have to be cast in metal, the wax must first be melted and poured (out of the mould) and all defects removed with cloth".

According to the *Vishṇu-saṁhitā* (XIV) "if an image is to be made of metal, it must first be made of wax, and then coated with earth; gold and other metals are purified and cast into (the mould), and a complete image is thus obtained by capable workmen". (For further details, see the Writer's *Indian Architecture*, page 87.) It will be noticed that the rules enunciated in the present text have been generally followed throughout the later works.

48–49. It should (then) be placed upon a seat (throne) and be adorned with flower garlands; and it should be (again) taken round the village (for approval) amidst all auspicious sounds.

50. (After the approval of the villagers and artists) it should be taken into the studio of the artist and the processes mentioned before should be repeated.

51–52. If (in the process) its minor limbs be broken, they should be made again, but if the head or the middle body be damaged, it (the whole idol) should be made anew.

53. If the master or the sculptor himself be not quite satisfied it should be changed and made again.

54–56. Nothing should be accepted which would leave behind a hesitating mind (not quite satisfied), because it would cause the loss of place and wealth, and the merits acquired through many births will at once be destroyed; the wise (artist) should, therefore, cast the idol free of all defects with all care and attention.

Thus in the *Mānạsāra*, the science of architecture, the sixty-eighth chapter, entitled:

The description (of rules) of casting of images in wax.

CHAPTER LXIX

THE PENALTIES FOR DEFECTIVE CONSTRUCTION

1–2. The evil consequences to the king, the kingdom, and the master, if there happen to be anything larger or smaller with regard to any part of the buildings, etc., will be stated here.

3–10. There should not be any defect in the breadth, the height, the plinth, the lintel, the pillar, the entablature, the platform, the neck, the (sperical) roof, the dome, the nose, the windows, etc , and the door, with regard to the portico, the stalk and such other parts, the sanctum (adytum), the floors, all the stairs and staircases, the wall, the gatehouses, the pavilions, the corridors, the balconies, the roof, the shed-yards, the sides, and the tops, and with regard to the foundation and the neighbouring area : nowhere should there be any defect.

11. The (vigilant) eye of the architect should avoid the possibility of any defect in those members.

12–13. If the breadth (of a member) be less (than what it should be) it would bring poverty upon the master ; if it be enormously greater, the wife of the master will die, there is no doubt about that.

14–15. If the main height be less, it is known to cause disease of the master ; if it be greater in measurement, the enemy would increase, there is no doubt about that.

16-17. If the plinth be, internally or externally, higher or lower (than what it ought to be), the race of the master will be inevitably exterminated.

18-19. The son of the master will die if the steps to the region of the plinth, or the projection, or the extension in height be lower or higher.

20. If the height of the base be less, the result would be the loss of position (lit., place) and wealth.

21-22. If the steps towards the assemblage of all the members like the rampart be lower or higher, the master would suffer from consumption of the higher limbs and the (sex) organ.

23. If the height of the pillar be lower or higher, the family and the race of the master will be exterminated.

24-25. If the height of the entablature be lower the master would die then and there; if it be of greater dimension (lit., measurement the master would be destroyed.

26. If the platform be by far the smaller, the master would lose his eye-sight (lit., become short-sighted).

27. If its ear (the wing of a building) be greater or less the food of the master will be destroyed.

28. If the component members of the roof be greater or less, the master would suffer from a boil (tumour) on the head.

29. If the dome be greater or less, the people would suffer from poverty.

30. If the nose part be greater or less, the master would suffer from some disease.

31. If the attics including the windows, etc., be less or greater the beauty would be largely destroyed.

32-33. If the measurement of the door or the portico be less or greater, the master would suffer from leprosy (lit., a severe illness), and the King and the country would be destroyed.

34. If the stalk (?) be greater or less, the master would suffer from abdominal diseases.

35. If the lattice (screened window) be less or greater there would be the loss of beauty and wealth.

36. If the adytum proper (of a temple) be greater or less, the village would be destroyed.

37-40. The part beginning from the plinth of an edifice up to the region of the lattice over the wall should be in particular very accurately measured; if through ignorance either the upper or lower portion of the lattice or the surrounding portion comprising (practically) the whole structure be made lower or higher all prosperity would be lost.

41-43. The temples of the attendant deities, etc., should be situated at the end of the courts; they may be built either along the plinth of the (boundary) wall, or along the plinth of the (main) structure; if the reverse be made, the prosperity of the people would be lost.

44. If the staircases be less or greater, the master would be certainly crippled.

45. If the component members of the wall be greater or less, thieves would destroy (steal) the wealth.

46. If the component members of the gatehouses be greater or less, all things would be destroyed: there is no doubt about it.

47-48. If those (component members) of the pavilions, etc., the halls, and the mansions be less or greater, all prosperity would be lost, and the King and the country would be destroyed.

49-50. The family (wife), sons, and grandsons of the master would die if the dimensions of the corridors, the verandahs (or the balconies) be less or more (than what they should be).

51-52. If the measurement of any component members of the upper storeys be less or more, the result for the people would be the scarcity of rain or overfall, by which the master himself may be destroyed.

53. The people would suffer from poverty (famine) if the shed-yards be greater or less (in measurement).

54. Good people would be destroyed if the measurement of the pentroofs be greater or less.

55-56. If the crowning portion (of a structure) be internally or externally greater or less, spread of learning would be stopped, and the friends would be destroyed, there is no doubt about that.

57-58. If the component members of the wall be greater or less in breadth or height all misfortune would come over to the twice born and all other castes.

59. If the lower part (lit., hip) of the foundation be greater or less, the structure and wealth would be lost.

60-62. If the walls of all description (dimensions) be supported by pillars at the base, in that case the greater or less dimensions of them will be free from any defect (i.e., be harmless), but such divergency will cause all defects if the walls be without any pillar at the base (as support).

63-65. If, therefore, in whatever building, those structures, (i.e., the walls) be made of more or less (dimensions) and be not supported by pillars, the destruction of the sons and grandsons (of the master) would be the result; but if they be as aforesaid and be furnished with pillars as support (lit., part) it will be always auspicious.

66-68. When, therefore, any discretion is to be exercised in matter of increment and decrement (of the prescribed measure), they must be in accordance with the aforesaid directions (*śāstra*), because, otherwise, if the increment or decrement be less or more at random the master will be destroyed; therefore, the learned artists should exercise the option as directed above.

69. These are the defects (consequences) stated by the ancients with regard to greater or less (inadequate) measurement of any component part (of a building).

70-73. The good or evil results following from the construction of the edifices, the pavilions, the courts and the connected structures, and the component members, also of the gatehouses and all other buildings would affect all men, deities, and even the kings.

Thus in the *Mānasāra*, the science of architecture, the sixty-ninth chapter, entitled:

The description of the defects in the component members.

CHAPTER LXX

THE CHISELLING OF THE EYE

1-2. The chiselling of the eye of the (idols of the) gods, goddesses, and devotees, and the purification (cleansing) of the phalli (of Śiva) will now be described in order of the subjects.

3-4. The chief architect (*sthapati*) is said to be the creator (*prakṛiti*) and the sculptor (*sthāpaka*) the life (of the images); therefore, they should work together in consutation with (lit., in company of) each other from the very beginning of the operation.

5-6. If anything be made in a reverse manner all things in connection with the objects for construction would be spoilt, and the master would certainly die.

7. As regards the chiselling, it is meant for giving sight to the eye (lit., removing darkness from the eye).

8-9. When the sun rises the rays spread all over, so also the case with the eye of an individual as regards its rising and setting.

10-11. The internal and external light (i.e., sight) as well as wealth would be lost, there is no doubt about it, if the eyes are not (properly) chiselled, (another) inevitable result would be the disease of the eye.

12. Therefore, the details of the chiselling of the eye will be stated now.

13-14. Both the chief architect (*sthapati*) and the sculptor (*sthāpaka*) should perform the aforesaid ceremony of sowing the seed (*aṅkurārpaṇa*) before the installation (of the image) in an edifice (temple) or in a pavilion.

15. Thereafter, in an auspicious moment, the eye (of the image) should be chiselled (as directed below).

16-17. The wise (architect) should build a pavilion for the holy sacrifice in connection with the chiselling of the eye, in front of the main temple (edifice) or on its right or left side.

18-20. It (the pavilion) should be a nine, seven, or five cubits square in shape, and be furnished with sixteen or twelve pillars, optionally with a pinnacle and with a shed-yard.

21. There should be four doors on the four directions, and also it should be furnished with four arches.

22. An altar (*vedi*) should be constructed as said before inside that pavilion.

23. In front of that (altar) a pit should be dug for the consecrated fire, and it should be besmeared with holy cow-dung.

24-25. It (the pavilion) should be decorated with ceremonial banners and flags, and various decorative cloths; the pillars also should be decorated, and the plantain trees with banana (fruits) should ornamently be placed (therein).

26. It should be decorated with garlands of plantains all round and at the top.

27. It should be also decorated with flower-garlands, jewels, and all other ornaments.

28. Thereafter the wise artists should chisel the eye (as stated below).

29-30. The *sthaṇḍila* plot (of forty-nine squares) or the *pīṭha* plot of nine squares should be made towards the west, the south or the south-west of the altar (which is situated in the centre of the pavilion).

31 Upon that (plot) should be placed the idol (whose eyes are to be chiselled, being) adorned with bunches of grass (*kūrcha*), etc.

32. Before doing that (the installation of the idol) a circular mark should be made round the *sthaṇḍila* plot with only a garland (of flowers).

33. Upon that (plot) towards the south-west should be placed a vessel filled with gold.

34. It (the vessel) should be covered with fine cloths, and be decorated with bunches of grass at the base.

35. The wise (architect) should (similarly) mark a circle on the altar (also) with the *śāli* (grain) powder.

36. Thereon should be marked a plot (*upapīṭha*) of twenty-five squares or the *pīṭha* plot (of nine squares).

37-38. They (those plots) should be covered with the *kuśa* grass, and thereafter should be marked with lines of powdered rice-grain only, and covered with various flowers and fried rice for decoration.

39. Thereon should be (placed) nine or twenty-five pitchers (in the same number of squares)

40-41. They (those pitchers) should be washed according to rules and be covered with strings, and being filled up with pure water should be placed on the altar.

42. The main pitcher should be placed in the centre and the others around it in order.

43-44. They (those pitchers) should be covered with all cloths, and be furnished with bunches, leaves, and ceremonial fruits, and should be adorned with flower garlands.

45. Like the aforesaid (pitchers) the eight auspicious things (*ashṭa-maṅgala*) should be placed on the upper altar.

46-48. Thereafter the wise architects should wash their feet and perform the ceremonial washing of the mouth, etc., according to rules; and then gathering together all (auspicious) things and amidst the pronouncement of 'good day' (*puṇyāha*) they should sprinkle the images, etc.

49-50. Brahmā and other gods should, in order, be worshipped again with their separate incantations beginning with the syllable *Om* and ending at the syllable *namaḥ*.

51-52. The wise (architect) should offer the holy incense and the lamp and worshipping with fragrance (sandal paste) and flowers meditate on the Lord of the Universe (as if revealed) in the middle pitcher.

53-54. Clarified butter, molasses, corn, curdled milk, milk-rice, etc., should be optionally offered (to the deity), and also the holy incense, the lamp, and the betel should be offered.

55. The *dhenu* (cow) and the other *mudrā* signs should be shown (to the deity) amidst singing, dancing, and sounds of music.

56. Then in order the wise chief architect (*sthapati*) should perform the sacrifice with the consecrated fire in front of that (pitcher).

57. The *samid* plant, the clarified butter, the holy boiled rice (*charu*), and the fried rice: each of these should be sacrificed to the fire one- hundred and eight times.

58-59. Twenty-five rounds should be made with pure water while uttering the mystic syllables known as the *hṛillekha* (written on the heart) and ending at the syllables *svāhā*.

60. The final (concluding) offering should be made to the idol (*bimba*) by uttering the *gāyatrī* hymn (a very sacred verse repeated by every Brahman at his devotions).

61. After the conclusion of the sacrificial ceremonies with the consecrated fire, the idol should be taken up (for the chiselling of its eyes).

62-63. The Brahmans should be caused to pronounce the syllable *puṇyāha* (good day), and then the purification of gems should be performed, and it (the idol) should be worshipped with perfumes (sandal paste) and flowers.

64. The chief architect (*sthapati*) should sprinkle the idol (with water) amidst all auspicious sounds.

65. Then the holy incense and the lamp should be offered to the idol by pronouncing the *gāyatrī* hymn.

66. It should be worshipped with perfumes and flowers, and then the cow-figure by the hands (*dhenumudrā*) should be shown to it.

67-68. (Then) he should conceal the limbs with new clothes (like a photographer), and mark (lit., write) the eyes of the idol: with undivided mind every part (of the eye) should be skilfully drawn (lit., touched) with the right hand (according to the rules of the *śāstra*).

69-71. The lines of the right eye should be drawn and the black ball (iris) and the sight ball (pupil) should be marked (lit., meditated on), and the sun hymn should be invoked (in order to bring in light to the eyes); thereafter the moon hymn should be uttered for (illuminating) the left eye.

72. The (third) eye should be marked on the forehead, and the fire hymn (*agni-bīja*) should be pronounced (in order to kindle it).

73. Then they (the eyes) should be anointed with water and clarified butter with a gold brush.

74. Then they should be covered with pieces of cloth and gold.

75. Milk-pudding, jewels, and a heap of corn should be again shown (to the idol).

76. The chief architect (*sthapati*) should be clad in bridal garments (best clothes), and wear (five) ornaments on the five limbs.

77. His body should be besmeared with the white (sandal) ointment, and he should wear new clothes and an upper scarf.

78. He should also put on the sacred thread made of gold, white flower, and be pure and holy.

79-82. Keeping the main pitcher on the right of himself (lit., his own image) towards the south and all other pitchers (to his left) towards the north and carried by the followers, and being accompanied by umbrellas and chowries, he should circumambulate the temple amidst the pronouncement of the Vedic hymns and all other auspicious pronouncement.

83-84. Then getting back to the idol, it should be anointed with water (from the main pitcher) and its minor limb, etc., should be anointed (lit., worshipped) with water from the other pitchers.

85. Thus (finishing with them) the pitchers should be thrown away after taking the strings (with which they were tied) from them.

86. It (the idol) should be furnished with various cloths and be adorned with various flowers.

87. It should be anointed with perfumed sandal and be adorned with all ornaments.

88. Then the holy incense and lamp should be offered to it amidst music, songs, and other pronouncement.

89-90. The ligatures (conjunct consonants) should be written on the body (of the architect) from the head to the heart (lit., life), and the (five) groups of letters (consonants) should be written from the foot up to the upper limit (i.e., the heart).

91-92. All the thirty-eight artistic signs (*kalā*) should be marked on the thirty-eight limbs, namely, the legs, the hands (arms), the face, and the other limbs and organs.

93-95. Then being absorbed in meditation he (the architect) should worship (the idol) by uttering the principal incantation (*mantra*) with perfumes and flowers, and offer the holy incense and lamp again, and afterwards, betel, dishes, and other things should be offered.

96. The Brāhmans (in the meantime) should sprinkle unhusked rice. and pronounce benediction (*svasti*).

97. The chief architect should show (to the idol) the *mudrā* signs (with his hands as the concluding ceremony) amidst music and songs.

98. Thus is described the chiselling of the eye. After this should be (performed) the circumambulation of the village (by the idol).

99. With regard to the cleansing and purifying of the phallus (of Śiva) lines should be similarly marked as aforesaid.

100. When the image (idol) is made of metallic substances[1], gems should be inserted in it.

101-102. After the carving of the Phallus and idols with stones (also), the gems should be engraved just before installation (as stated below).

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[1] See Chapter L.I., 1—4.

103–108. Nine chambers should be made on the pedestal (*pīṭha*), the ruby should be engraved in the centre, the diamond in the east; the coral in the south-eastern chamber, the sapphire in the south; the cat's eye in the south-west, and the emerald in the west; the topaz in the north-west, and the pearl in the north; and the sapphire, according to rules, should be engraved by the wise man on the north-eastern chamber.

109. Both the chief architect (*sthapati*) and the sculptor (*sthāpaka*) should insert (the gems) in the idol and the phallus (of Śiva).

110. Thus is described the engraving of the gems; the rest should be as is usually said.

111 Like a lamp it (the eye) should be the chief (shining) thing in the lotus like heart (of the artists).

112-114. The rules of chiselling of all sorts of of eyes of the lotus-born Brahmā, Hari (Vishṇu), Hara (Śiva), and all other gods are stated in detail in this *Mānasāra* as prescribed by the ancients.

115-118. This great science (of architecture) was at first revealed by Brahmā, Indra, and all other gods: it is from their statements that this *Mānasāra* (the essence of measurement) has been compiled as a guide book (for the architects) for the benefit of the people.

Thus in the *Mānasāra*, the science of architecture, the seventieth chapter, entitled:

The description of the chiselling of the eye (of images).

The *Mānasāra* is complete.

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